



# South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178  
(909) 396-2000 • [www.aqmd.gov](http://www.aqmd.gov)

**SUBJECT: NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL ASSESSMENT**

**PROJECT TITLE: PROPOSED AMENDED RULE 1146 – EMISSIONS OF OXIDES OF NITROGEN FROM INDUSTRIAL, INSTITUTIONAL, AND COMMERCIAL BOILERS, STEAM GENERATORS, AND PROCESS HEATERS**

In accordance with the California Environmental Quality Act (CEQA), the South Coast Air Quality Management District (SCAQMD), as the Lead Agency, has prepared this Notice of Preparation (NOP) and Initial Study (IS). This NOP serves two purposes: 1) to solicit information on the scope of the environmental analysis for the proposed project, and 2) to notify the public that the SCAQMD will prepare a Draft Environmental Assessment (EA) to further assess potential environmental impacts that may result from implementing the proposed project.

This letter, NOP and the attached IS are not SCAQMD applications or forms requiring a response from you. Their purpose is simply to provide information to you on the above project. If the proposed project has no bearing on you or your organization, no action on your part is necessary.

Comments focusing on your area of expertise, your agency's area of jurisdiction, or issues relative to the environmental analysis should be addressed to Ms. Barbara Radlein (c/o CEQA) at the address shown above, or sent by FAX to (909) 396-3324 or by e-mail to [bradlein@aqmd.gov](mailto:bradlein@aqmd.gov). Comments must be received no later than 5:00 PM on Friday, February 29, 2008. Please include the name and phone number of the contact person for your agency. Questions relative to the proposed amended rule should be directed to Mr. Gary Quinn at (909) 396-3121.

The Public Hearing for the proposed amended rule is scheduled for June 6, 2008. (Note: Public meeting dates are subject to change).

**Date:** January 30, 2008

**Signature:** \_\_\_\_\_

*Steve Smith*

Steve Smith, Ph.D.  
Program Supervisor  
Planning, Rules, and Area Sources

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**  
**21865 Copley Drive, Diamond Bar, CA 91765-4178**

**NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL ASSESSMENT**

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**Project Title:**

Draft Environmental Assessment for Proposed Amended Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters

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**Project Location:**

South Coast Air Quality Management District (SCAQMD) area of jurisdiction consisting of the four-county South Coast Air Basin (Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of the Salton Sea Air Basin and the Mojave Desert Air Basin

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**Description of Nature, Purpose, and Beneficiaries of Project:**

SCAQMD staff is proposing amendments to Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters to reduce the allowable NOx emission limits from 30 parts per million (ppm) to 12, nine, or five ppm, depending on equipment size, operational characteristics, and energy efficiency. The proposed amendments to Rule 1146 will also propose NOx compliance limits for units burning landfill or digester gases at 25 ppm and 15 ppm, respectively. Other changes are proposed that include: 1) establishing annual tune-up procedures and monthly maintenance procedures; 2) limiting timeframe for derating equipment; and, 3) allowing a 30 ppm NOx compliance limit for low fuel usage equipment by January 1, 2015, or until burner replacement, which ever occurs later. Other minor changes are proposed for clarity and consistency throughout the rule. The Initial Study identified “air quality” and “hazards and hazardous materials” as the only areas that may be adversely affected by the proposed project. Impacts to these environmental areas will be further analyzed in the Draft EA.

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**Lead Agency:**

South Coast Air Quality Management District

**Division:**

Planning, Rule Development and Area Sources

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**Initial Study and all supporting documentation are available at:**

SCAQMD Headquarters  
21865 Copley Drive  
Diamond Bar, CA 91765

**or by calling:**

(909) 396-2039

**or by accessing the SCAQMD’s website at:**

<http://www.aqmd.gov/ceqa/aqmd.html>

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**The Public Notice of Preparation is provided through the following:**

☒ Los Angeles Times (January 31, 2008)

☒ AQMD Website

☒ AQMD Mailing List

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**Initial Study 30-day Review Period:**

January 31, 2008 – February 29, 2008

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**Scheduled Public Meeting Dates (subject to change):**

Public Workshop & CEQA Scoping Meeting: To be Determined

SCAQMD Governing Board Hearing: June 6, 2008, 9:00 a.m.; SCAQMD Headquarters

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**Send CEQA Comments to:**

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**Direct Questions on Proposed Amendments:**

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# **SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

## **Initial Study for Proposed Amended Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters**

**January 2008**

**SCAQMD No. 013008BAR**

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## **CHAPTER 1 - PROJECT DESCRIPTION**

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**Introduction**

**California Environmental Quality Act**

**Project Location**

**Project Background**

**Project Objective**

**Project Description**

**Technology Overview**

**Alternatives**

## INTRODUCTION

The California Legislature created the South Coast Air Quality Management District (SCAQMD) in 1977<sup>1</sup> as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin and Mojave Desert Air Basin referred to herein as the district. By statute, the SCAQMD is required to adopt an air quality management plan (AQMP) demonstrating compliance with all federal and state ambient air quality standards for the district<sup>2</sup>. Furthermore, the SCAQMD must adopt rules and regulations that carry out the AQMP<sup>3</sup>. The 2007 AQMP concluded that major reductions in emissions of volatile organic compounds (VOCs), oxides of sulfur (SOx) and oxides of nitrogen (NOx) are necessary to attain the air quality standards for ozone (the key ingredient of smog) and particulate matter (PM10 and PM2.5). Ozone, a criteria pollutant, is formed when VOCs react with NOx in the atmosphere and has been shown to adversely affect human health and to contribute to the formation of PM10 and PM2.5.

Adopted in September 1988, Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters, applies to most boilers, steam generators and process heaters with a rated heat input capacity greater than or equal to five million British Thermal Units per hour (MMBTU/hr) and are used in industrial, institutional, and commercial operations. However, Rule 1146 does not regulate NOx emissions from electric utility boilers, petroleum refinery boilers and process heaters with a rated heat input capacity greater than 40 MMBTU/hr, sulfur plant reactor boilers, waste heat recovery boilers serving combustion turbines, and an unfired waste heat recovery boiler that is used to recover heat from the exhaust of any combustion equipment as NOx emissions from these equipment are regulated by other stationary source rules.

The primary objectives of the currently proposed amendments to Rule 1146 (PAR 1146) are to reduce the allowable NOx emission limits from 30 parts per million (ppm) to 12, nine or five ppm, depending on equipment size, operational characteristics, and energy efficiency. PAR 1146 will also propose NOx compliance limits for units burning landfill or digester gases at 25 ppm and 15 ppm, respectively. Other changes are proposed that include: 1) establishing annual tune-up procedures and monthly maintenance procedures; 2) limiting timeframe for derating equipment; and, 3) allowing a 30 ppm NOx compliance limit for low fuel usage equipment by January 1, 2015, or until burner replacement, whichever occurs later. Another objective of PAR 1146 is to comply with all feasible measures specified in the July 2006 demonstration to the United States Environmental Protection Agency (EPA) that SCAQMD's current air pollution rules fulfill the 8-hour ozone Reasonably Available Control Technology (RACT) standards. Other minor changes are proposed for clarity and consistency throughout the rule. PAR 1146 is estimated to reduce approximately 1.3 tons per day of NOx emissions by 2017. Despite this projected environmental benefit to air quality, this Initial Study, prepared pursuant to the California Environmental Quality Act (CEQA), identified "air quality" during construction activities and "hazards and hazardous materials" during operational activities as the only areas that may be adversely affected by the proposed project. Impacts to these environmental areas will be further analyzed in the Draft EA.

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<sup>1</sup> The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., ch 324 (codified at Health & Safety Code, §§40400-40540).

<sup>2</sup> Health & Safety Code, §40460 (a).

<sup>3</sup> Health & Safety Code, §40440 (a).

## **CALIFORNIA ENVIRONMENTAL QUALITY ACT**

PAR 1146 is considered a “project” as defined by CEQA. CEQA requires that the potential adverse environmental impacts of proposed projects be evaluated and that methods to reduce or avoid identified significant adverse environmental impacts of these projects be implemented if feasible. The purpose of the CEQA process is to inform the SCAQMD's Governing Board, public agencies, and interested parties of potential adverse environmental impacts that could result from implementing the proposed project and to identify feasible mitigation measures when an impact is significant.

California Public Resources Code §21080.5 allows public agencies with regulatory programs to prepare a plan or other written documents in lieu of an environmental impact report once the Secretary of the Resources Agency has certified the regulatory program. The SCAQMD's regulatory program was certified by the Secretary of Resources Agency on March 1, 1989, and is codified as SCAQMD Rule 110. Pursuant to Rule 110 (the rule which implements the SCAQMD's certified regulatory program), SCAQMD is preparing a Draft Environmental Assessment (EA) to evaluate potential adverse impacts from the proposed project.

The SCAQMD as Lead Agency for the proposed project, has prepared this Initial Study (which includes an Environmental Checklist and project description). The Environmental Checklist provides a standard evaluation tool to identify a project's adverse environmental impacts. The Initial Study is also intended to provide information about the proposed project to other public agencies and interested parties prior to the release of the Draft Environmental Assessment (EA). Written comments on the scope of the environmental analysis will be considered (if received by the SCAQMD during the 30-day review period) when preparing the Draft EA.

## **PROJECT LOCATION**

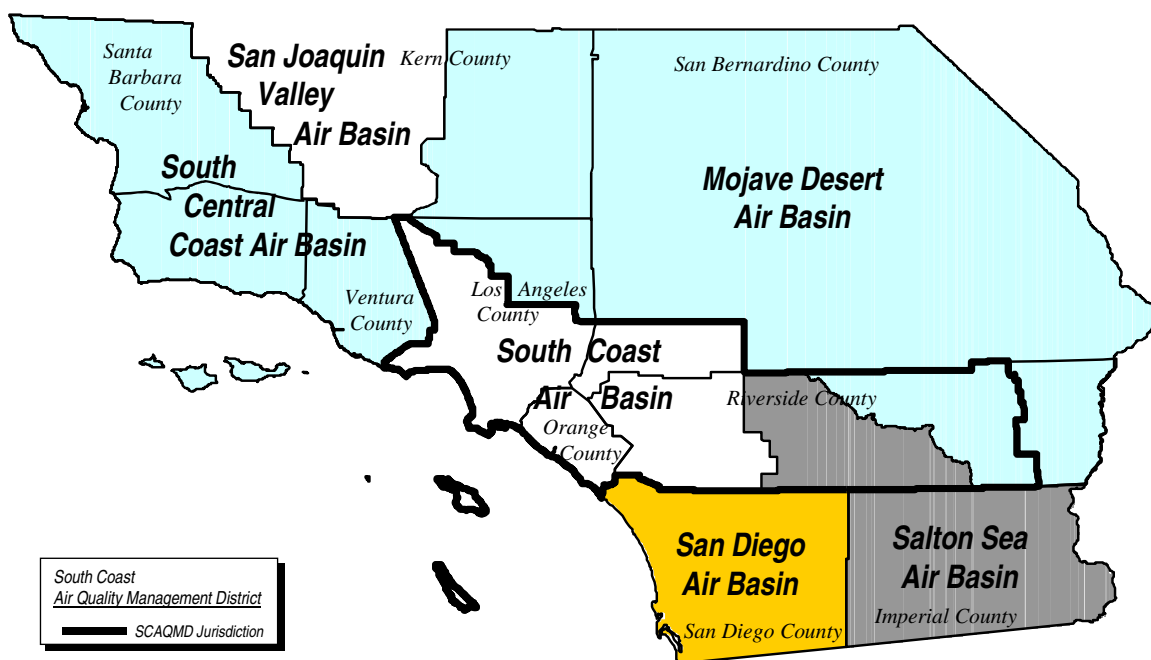
PAR 1146 would apply to boilers, steam generators and process heaters with maximum rated heat input capacities greater than or equal to five MMBTU/hr that operate throughout the entire SCAQMD jurisdiction. The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Basin) (Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). The Basin, which is a subarea of the SCAQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federal nonattainment area (known as the Coachella Valley Planning Area) is a subregion of Riverside County and the SSAB that is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east (Figure 1-1).

## **PROJECT BACKGROUND**

Rule 1146 regulates both NO<sub>x</sub> and CO emissions from most boilers, steam generators and process heaters with a rated heat input capacity greater than or equal to five MMBTU/hr and are used in industrial, institutional, and commercial operations. However, Rule 1146 does not regulate NO<sub>x</sub> emissions from electric utility boilers, petroleum refinery boilers and process heaters with a rated heat input capacity greater than 40 MMBTU/hr, sulfur plant reactor boilers, waste heat recovery boilers serving combustion turbines, and an unfired waste heat recovery boiler that is used to recover heat from the exhaust of any combustion equipment. Instead, these



sources are subject to other SCAQMD Rules and Regulations. Further, the NO<sub>x</sub> limits in Rule 1146 do not apply to facilities that would otherwise be subject to the NO<sub>x</sub> control requirements in Regulation XX – Regional Clean Air Incentives Market (RECLAIM).



**Figure 1-1**  
**South Coast Air Quality Management District**

Rule 1146 also provides compliance options for equipment that meet low fuel usage criteria. In addition to the emission limits, Rule 1146 also includes recordkeeping requirements, compliance determination procedures, a compliance schedule, exemptions, and equipment tuning procedures.

Rule 1146 applies to several types of boilers, steam generators, and process heaters. Boilers and steam generators produce hot water or steam for use in office buildings, commercial establishments, hospitals, schools, universities, hotels and various industrial operations. Process heaters are used in industrial operations for heating material streams either directly or indirectly via heat exchangers. For each application, multiple designs of boilers, steam generators and process heaters are available in the marketplace.

Under Rule 1146, any unit with an annual fuel usage that exceed 90,000 therms per year is required to either meet a 30 ppm NO<sub>x</sub> emission limit and a 400 ppm CO emission limit if the fuel burned is gaseous (i.e. natural gas), or a 40 ppm NO<sub>x</sub> emission limit and a 400 ppm CO emission limit if the fuel burned is non-gaseous (i.e. diesel). Further, any unit that burns a

combination of gaseous and non-gaseous fuel in excess of 90,000 therms annually is required to meter the quantity of each fuel used and to meet a weighted average NO<sub>x</sub> emission limit between 30 and 40 ppm.

Rule 1146 also requires continuous in-stack NO<sub>x</sub> monitoring for any unit that has a maximum rated heat input of 40 MMBTU/hr or higher and has an annual heat input of 200,000 therms. All units subject to Rule 1146 are required to conduct annual emissions testing

Rule 1146 provides an exemption from complying with NO<sub>x</sub> emission limits because of low fuel usage, provided that the fuel use is metered and either the stack gas oxygen concentration is maintained at three percent or less, on a dry basis, or the unit is tuned at least twice per year.

## **PROJECT OBJECTIVE**

The primary objectives of PAR 1146 are to reduce the allowable NO<sub>x</sub> emission limits from 30 ppm to 12, nine or five ppm, depending on equipment size, operational characteristics, and energy efficiency. PAR 1146 will also propose NO<sub>x</sub> compliance limits for units burning landfill or digester gases at 25 ppm and 15 ppm, respectively. Another objective of PAR 1146 is to comply with all feasible measures specified in the July 2006 demonstration to the EPA that SCAQMD's current air pollution rules fulfill the 8-hour ozone RACT standards. Other changes are proposed that include: 1) establishing annual tune-up procedures and monthly maintenance procedures; 2) limiting timeframe for derating equipment; and, 3) allowing a 30 ppm NO<sub>x</sub> compliance limit for low fuel usage equipment until burner replacement but no later than a 15-year equipment life. Other minor changes are proposed for clarity and consistency throughout the rule. PAR 1146 is estimated to reduce approximately 1.3 tons per day of NO<sub>x</sub> emissions by 2017.

## **PROJECT DESCRIPTION**

The following is a summary of the key proposed amendments to Rule 1146. Other minor changes are also proposed for clarity and consistency throughout the rule. A copy of the proposed amended rule can be found in Appendix A.

### Definitions

The following new definitions are added to PAR 1146: "Group I unit," "Group II unit," "Group III unit," "load-following unit," and "school."

### Applicability

The applicability of PAR 1146 is expanded to also include boilers, steam generators, and process heaters at facilities equipped with multiple units that collectively have a total rated heat input of eight MMBTU/hr.

### Requirements

It is expected that the objective of reducing 1.3 tons per day of additional NO<sub>x</sub> reductions can be achieved because operators of several equipment rating categories of non-RECLAIM boilers, steam generators, and process heaters have lowered NO<sub>x</sub> emission limits to 30 ppm. A summary of the proposed NO<sub>x</sub> emission limits for each equipment rating is shown in Table 1-1.

A fuel efficiency formula to adjust allowable emission limits has been added to PAR 1146 so that facilities can operate efficient boilers while achieving equivalent NO<sub>x</sub> emission reductions. Further, for units that use dual co-fire fuels, clarifications are proposed so that the formula for

calculating the weighted average is based on the appropriate compliance limit and heat input for each fuel used.

**Table 1-1**  
**Proposed NO<sub>x</sub> Emission Limits**

<b>Group Unit Number</b>	<b>Equipment Rating (MMBTU/hr)</b>	<b>Fuel Type</b>	<b>Current NO<sub>x</sub> Limit</b>	<b>Proposed NO<sub>x</sub> Limit</b>
--	Any	non-gaseous	40 ppm	40 ppm
I	$\geq 75$	gaseous	30 ppm; or, 0.036 lb/MMBTU	5 ppm; or, 0.0062 lb/MMBTU
II	$\leq 20 \times < 75$	gaseous (excludes landfill & digester gases)	30 ppm; or, 0.036 lb/MMBTU	5 to 9 ppm; or, 0.0062 to 0.011 lb/MMBTU
III	$\leq 5 \times < 20$ includes all load following units, plus units operated at schools & universities)	gaseous (excludes landfill & digester gases)	30 ppm; or, 0.036 lb/MMBTU	9 to 12 ppm; or, 0.011 to 0.015 lb/MMBTU
--	Any	landfill gas	30 ppm; or, 0.036 lb/MMBTU	25 ppm
--	Any	digester gas	30 ppm; or, 0.036 lb/MMBTU	15 ppm

If unit operators choose to select the tune-up option for verifying compliance, requirements for operators to keep records for a rolling 24-month period are added to PAR 1146. Other clarifications to the tune-up procedures are included for consistency throughout the rule.

#### Compliance Determination

Requirements for operators to conduct an emissions compliance determination at least every 250 operating hours or 30 days subsequent to the tuning or servicing of a unit are added. However, PAR 1146 will no longer allow pre-tests for emission determinations. Similarly, emission checks via portable analyzer will be required on a monthly basis or every 750 unit operating hours, whichever occurs later.

For units with a rated heat input capacity greater than or equal to 40 MMBTU/hr and an annual heat input greater than 200,000 MMBTU that are required to demonstrate compliance with the applicable NO<sub>x</sub> emission concentration limit, PAR 1146 clarifies an existing requirement for the use of either a continuous in-stack NO<sub>x</sub> monitor or equivalent verification system.

### Compliance Schedule

A summary of the proposed compliance dates for each equipment rating with proposed NOx limits is shown in Table 1-2. Standard and enhanced compliance dates are provided because equipment type and operation may make it difficult for a unit to comply with the enhanced option on a continuous basis. Consequently, the standard compliance dates option is also provided to allow the unit to achieve compliance with a less stringent limit but on a more aggressive implementation schedule.

**Table 1-2**  
**Proposed Compliance Schedule**

<b>Group Unit Number</b>	<b>Equipment Rating (MMBTU/hr)</b>	<b>Fuel Type</b>	<b>Proposed NOx Limit</b>	<b>Compliance Date: Standard</b>	<b>Compliance Date: Enhanced</b>
--	Any	non-gaseous	40 ppm	date of adoption	--
--	Any	gaseous	30 ppm	date of adoption	--
I	$\geq 75$	gaseous	5 ppm; or, 0.0062 lb/MMBTU	01/01/2011	--
II	$\leq 20 \times < 75$	gaseous, but excluding landfill & digester gases	5 to 9 ppm; or, 0.0062 to 0.011 lb/MMBTU	75% by 01/01/2012; and, 100% by 01/01/2014	75% by 01/01/2014; and, 100% by 01/01/2016
III	$\leq 5 \times < 20$ (includes all load following units, plus units operated at schools & universities)	gaseous, but excluding landfill & digester gases	9 to 12 ppm; or, 0.011 to 0.015 lb/MMBTU	75% by 01/01/2013; and, 100% by 01/01/2015	75% by 01/01/2015; and, 100% by 01/01/2017
Any	Any	landfill gas	25 ppm	01/01/2015	--
Any	Any	digester gas	15 ppm	01/01/2015	--

## **TECHNOLOGY OVERVIEW**

### Combustion Equipment

To appreciate the mechanics of NOx control equipment and techniques, it is necessary to first understand how NOx emissions are generated from various combustion sources that may be potentially affected by PAR 1146 boilers, process heaters, and steam generating equipment. Combustion is a high temperature chemical reaction resulting from burning a gas, liquid, or solid fuel (e.g., natural gas, diesel, fuel oil, gasoline, propane, and coal) in the presence of air (oxygen and nitrogen) to produce: 1) heat energy; and, 2) water vapor or steam. An ideal combustion reaction is when the entire amount of fuel needed is completely combusted in the presence of air

so that only carbon dioxide (CO<sub>2</sub>) and water are produced as by-products. However, since fuel contains other components such as nitrogen and sulfur plus the amount of air mixed with the fuel can vary, in practice, the combustion of fuel is not a “perfect” reaction. As such, uncombusted fuel plus smog-forming by-products such as NO<sub>x</sub>, SO<sub>x</sub>, carbon monoxide (CO), and soot (solid carbon) can be discharged into the atmosphere.

Of the total NO<sub>x</sub> emissions that can be generated, there are two types of NO<sub>x</sub> formed during combustion: 1) thermal NO<sub>x</sub>; and, 2) fuel NO<sub>x</sub>. Thermal NO<sub>x</sub> is produced from the reaction between the nitrogen and oxygen in the combustion air at high temperatures while fuel NO<sub>x</sub> is formed from a reaction between the nitrogen already present in the fuel and the available oxygen in the combustion air. As the source of nitrogen in fuel is more prevalent in oil and coal, and is negligible in natural gas, the amount of fuel NO<sub>x</sub> generated is dependent on fuel type. For example, with oil that contains significant amounts of fuel-bound nitrogen, fuel NO<sub>x</sub> can account for up to 50 percent of the total NO<sub>x</sub> emissions generated. Though boilers, process heaters, and steam generators have varying purposes in commercial, industrial, and utility applications, at a minimum, they all generate thermal NO<sub>x</sub> as a combustion by-product. The following provides a brief description of the various types of existing combustion equipment that may be affected by PAR 1146 and subsequently retrofitted with ultra low-NO<sub>x</sub> burners or SCR NO<sub>x</sub> control equipment.

#### Boilers and Steam Generators

A typical boiler, also referred to as a steam generator, is a steel or cast-iron pressure vessel equipped with burners that combust liquid, gas, or solid fossil fuel to produce steam or hot water. Boilers are classified according to the amount of energy output in MMBTU/hr, the type of fuel burned (natural gas, diesel, fuel oil, etc.), operating steam pressure in pounds per square inch (psi), and heat transfer media. In addition, boilers are further defined by the type of burners used and air pollution control techniques. The burner is where the fuel and combustion air are introduced, mixed, and then combusted.

#### Process Heaters

A process heater is a type of combustion equipment that burns liquid, gaseous, or solid fossil fuel for the purpose of transferring heat from combustion gases to heat water or process streams. Process heaters are not kilns or ovens used for drying, curing, baking, cooking, calcining, or vitrifying; or any unfired waste heat recovery heater that is used to recover sensible heat from the exhaust of any combustion equipment.

#### NO<sub>x</sub> Control

As reducing NO<sub>x</sub> emissions is the main objective of PAR 1146, there are two primary approaches for reducing NO<sub>x</sub> emissions for the affected sources: 1) by replacing existing burners with ultra low-NO<sub>x</sub> burner technology to minimize the amount of NO<sub>x</sub> generated during combustion; or 2) by installing SCR control technology to control the NO<sub>x</sub> after it has been generated or ‘post-combustion’. The possibility of other types of NO<sub>x</sub> control technologies being used to comply with PAR 1146 will be further evaluated in the Draft EA.

#### Staged Combustion and Ultra Low-NO<sub>x</sub> Burners

Often, fuel and air are pre-mixed prior to combustion in order to create a lower and more uniform flame temperature. Some pre-mix burners also use staged combustion with a fuel-rich zone to start combustion and stabilize the flame and a fuel lean zone to complete combustion and reduce the peak flame temperature. Stage combustion is a technique utilized in boilers, process

heaters, and steam generators to help achieve lower NO<sub>x</sub> emissions by dividing the combustion process into a number of stages in which the air-to-fuel ratio is varied to manipulate the conditions that would make NO<sub>x</sub> formation less ideal. Staged combustion is divided into two categories: staged air combustion and staged fuel combustion. Staged air combustion controls the formation of NO<sub>x</sub> by staging or staggering the total amount of air required for combustion to occur and can be achieved by installing low-NO<sub>x</sub> burners. Only a portion of the total air needed for combustion is used to form a fuel-rich primary combustion zone, in which all of the fuel is partially burned. Then, combustion is fully completed when the remainder of the combustion air is injected in a secondary zone which is located downstream of the fuel-rich primary zone. Because some heat is transferred prior to the completion of combustion, peak combustion temperatures are lower (which reduces formation of thermal NO<sub>x</sub>) with stage air combustion than with conventional combustion.

Without limiting the combustion air, staged fuel combustion controls the formation of NO<sub>x</sub> by staging the amount of fuel needed for combustion. With a high level of excess air in the primary combustion zone, the peak combustion temperature drops and subsequently reduces NO<sub>x</sub> formation. Additional fuel is later injected in the secondary combustion zone at a higher pressure and velocity than in the primary combustion zone, to stimulate flue gas recirculation and recycle the exhaust air back to the burner, further reduce combustion temperature, and decrease the availability of oxygen needed to form NO<sub>x</sub>.

Burners can also be designed to spread flames over a larger area to reduce hot spots and lower NO<sub>x</sub> emissions. Radiant pre-mix burners with ceramic, sintered metal, or metal fiber heads spread the flame to produce more radiant heat. When a burner produces more radiant heat, less heat escapes the combustion equipment through the exhaust gases. To accomplish this goal, most pre-mix burners require a blower to mix the fuel with the air before combustion takes place. However, increasing the amount of air can reduce the flame temperature along with the combustion gas temperature and in turn, reduce efficiency of the combustion unit. Further, increasing the air flow may destabilize the flame. Thus, ultra low NO<sub>x</sub> burners require sophisticated controls to maintain emission levels while optimizing combustion efficiency. Ultra low- NO<sub>x</sub> burners can achieve less than 9 ppm NO<sub>x</sub> at three percent oxygen.

### Selective Catalytic Reduction

Selective Catalytic Reduction (SCR) is post-combustion control equipment that is considered to be Best Available Retrofit Control Technology (BARCT), if cost-effective, for NO<sub>x</sub> control of existing combustion sources like boilers, process heaters, and steam generators as it is capable of reducing NO<sub>x</sub> emissions by as much as 90 percent or higher. A typical SCR system design consists of an ammonia storage tank, ammonia vaporization and injection equipment, a booster fan for the flue gas exhaust, an SCR reactor with catalyst, an exhaust stack plus ancillary electronic instrumentation and operations control equipment. The way an SCR system reduces NO<sub>x</sub> is by a matrix of nozzles injecting a mixture of ammonia and air directly into the flue gas exhaust stream from the combustion equipment. As this mixture flows into the SCR reactor that is replete with catalyst, the catalyst, ammonia, and oxygen (from the air) in the flue gas exhaust reacts primarily (i.e., selectively) with NO and NO<sub>2</sub> to form nitrogen and water in the presence of a catalyst. The amount of ammonia introduced into the SCR system is approximately a one-to-one molar ratio of ammonia to NO<sub>x</sub> for optimum control efficiency, though the ratio may vary based on equipment-specific NO<sub>x</sub> reduction requirements. There are two main types of catalysts: one in which the catalyst is coated onto a metal structure and a ceramic-based catalyst onto which the catalyst components are calcified. Commercial catalysts used in SCRs are

available in two types of solid, block configurations or modules, plate or honeycomb type, and are comprised of a base material of titanium dioxide (TiO<sub>2</sub>) that is coated with either tungsten trioxide (WO<sub>3</sub>), molybdenic anhydride (MoO<sub>3</sub>), vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>), or iron oxide (Fe<sub>2</sub>O<sub>3</sub>). These catalysts are used for SCRs because of their high activity, insensitivity to sulfur in the exhaust, and useful life span of approximately five years. Ultimately, the material composition of the catalyst is dependent upon the application and flue gas conditions such as gas composition, temperature, et cetera.

For conventional SCRs, the minimum temperature for NO<sub>x</sub> reduction is 500 degrees Fahrenheit (°F) and the maximum operating temperature for the catalyst is 800 °F. Depending on the application, the type of fuel combusted, and the presence of sulfur compounds in the exhaust gas, the optimum flue gas temperature of an SCR system is case-by-case and will range between 550 °F and 750 °F to limit the occurrence of several undesirable side reactions at certain conditions. One of the major concerns with the SCR process is the poisoning of the catalyst due to the presence of sulfur and the oxidation of sulfur dioxide (SO<sub>2</sub>) in the exhaust gas to sulfur trioxide (SO<sub>3</sub>) and the subsequent reaction between SO<sub>3</sub> and ammonia to form ammonium bisulfate or ammonium sulfate. The formation of either ammonium bisulfate or ammonium sulfate depends on the amount of SO<sub>3</sub> and ammonia present in the flue gas and can cause equipment plugging downstream of the catalyst. The presence of particulates, heavy metals and silica in the flue gas exhaust can also limit catalyst performance. However, minimizing the quantity of injected ammonia and maintaining the ammonia temperature within a predetermined range will help avoid these undesirable reactions while minimizing the production of unreacted ammonia which is commonly referred to as 'ammonia slip.' Depending on the type of combustion equipment utilizing SCR technology, the typical amount of ammonia slip can vary between five ppmv when the catalyst is fresh and 20 ppmv at the end of the catalyst life, which is generally about five years. Permit conditions are typically place on SCR units that limit ammonia slip to 10 ppmv or less.

## **ALTERNATIVES**

The Draft EA will discuss and compare alternatives to the proposed project as required by CEQA and by SCAQMD Rule 110. Alternatives must include realistic measures for attaining the basic objectives of the proposed project and provide a means for evaluating the comparative merits of each alternative. In addition, the range of alternatives must be sufficient to permit a reasoned choice and it need not include every conceivable project alternative. The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation. A CEQA document need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative. Suggestions on alternatives submitted by the public will be evaluated for inclusion in the Draft EA.

SCAQMD Rule 110 does not impose any greater requirements for a discussion of project alternatives in an environmental assessment than is required for an Environmental Impact Report under CEQA. Alternatives will be developed based in part on the major components of the proposed rule. The rationale for selecting alternatives rests on CEQA's requirement to present "realistic" alternatives; that is alternatives that can actually be implemented. CEQA also requires an evaluation of a "No Project Alternative."

SCAQMD's policy document Environmental Justice Program Enhancements for fiscal year (FY) 2002-03, Enhancement II-1 recommends that all SCAQMD CEQA assessments include a feasible project alternative with the lowest air toxics emissions. In other words, for any major

equipment or process type under the scope of the proposed project that creates a significant environmental impact, at least one alternative, where feasible, shall be considered from a “least harmful” perspective with regard to hazardous air emissions.

The Governing Board may choose to adopt any portion or all of any alternative presented in the EA. The Governing Board is able to adopt any portion or all of any of the alternatives presented because the impacts of each alternative will be fully disclosed to the public and the public will have the opportunity to comment on the alternatives and impacts generated by each alternative.

Written suggestions on potential project alternatives received during the comment period for the Initial Study will be considered when preparing the Draft EA.



## **CHAPTER 2 - ENVIRONMENTAL CHECKLIST**

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**Introduction**

**General Information**

**Potentially Significant Impact Areas**

**Determination**

**Environmental Checklist and Discussion**

## INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by adopting the proposed amendments to Rule 1146.

## GENERAL INFORMATION

Name of Proponent:	South Coast Air Quality Management District
Address of Proponent:	21865 Copley Drive Diamond Bar, CA 91765
Lead Agency:	South Coast Air Quality Management District
CEQA Contact Person:	Barbara Radlein (909) 396-2716
Rule Contact Person:	Gary Quinn (909) 396-3121
Name of Project:	Proposed Amended Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters

## POTENTIALLY SIGNIFICANT IMPACT AREAS

The following environmental impact areas have been assessed to determine their potential to be affected by the proposed project. Any checked items represent areas that may be adversely affected by the proposed project. An explanation relative to the determination of impacts can be found following the checklist for each area.

<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Geology and Soils	<input type="checkbox"/> Population and Housing
<input type="checkbox"/> Agricultural Resources	<input checked="" type="checkbox"/> Hazards and Hazardous Materials	<input type="checkbox"/> Public Services
<input checked="" type="checkbox"/> Air Quality	<input type="checkbox"/> Hydrology and Water Quality	<input type="checkbox"/> Recreation
<input type="checkbox"/> Biological Resources	<input type="checkbox"/> Land Use and Planning	<input type="checkbox"/> Solid/Hazardous Waste
<input type="checkbox"/> Cultural Resources	<input type="checkbox"/> Mineral Resources	<input type="checkbox"/> Transportation./Traffic
<input type="checkbox"/> Energy	<input type="checkbox"/> Noise	<input checked="" type="checkbox"/> Mandatory Findings

## DETERMINATION

On the basis of this initial evaluation:

- ☐ I find the proposed project, in accordance with those findings made pursuant to CEQA Guideline §15252, could NOT have a significant effect on the environment, and that an ENVIRONMENTAL ASSESSMENT with no significant impacts will be prepared.
- ☐ I find that although the proposed project could have a significant effect on the environment, there will NOT be significant effects in this case because the mitigation measures described on an attached sheet have been added to the project. An ENVIRONMENTAL ASSESSMENT with no significant impacts will be prepared.
- ☒ I find that the project MAY have a significant effect(s) on the environment, and an ENVIRONMENTAL ASSESSMENT will be prepared.

Date: January 30, 2008

Signature: \_\_\_\_\_

*Steve Smith*

Steve Smith, Ph.D.  
Program Supervisor – CEQA Section  
Planning, Rules, and Area Sources

## ENVIRONMENTAL CHECKLIST AND DISCUSSION

SCAQMD staff is proposing amendments to Rule 1146 to reduce the allowable NO<sub>x</sub> emission limits from 30 ppm to 12, nine or five ppm, depending on equipment size, operational characteristics, and energy efficiency. PAR 1146 will also propose lower NO<sub>x</sub> compliance limits for units burning landfill or digester gases at 25 ppm and 15 ppm, respectively. PAR 1146 is estimated to reduce approximately 1.3 tons per day of NO<sub>x</sub> emissions by 2017. This portion of the proposed amendments may require installation or modification of NO<sub>x</sub> emission control equipment. Specifically, compliance with these components of PAR 1146 is expected to result in operators retrofitting existing equipment with ultra low-NO<sub>x</sub> burners or selective catalytic reduction (SCR) technology. However, based on preliminary size data of the affected equipment, only eight facilities are expected to need SCR technology to comply with PAR 1146.

Other procedural changes to Rule 1146 are proposed that would: 1) establish annual tune-up procedures and monthly maintenance procedures; 2) limit timeframe for derating equipment; and, 3) allow a 30 ppm NO<sub>x</sub> compliance limit for low fuel usage equipment until burner replacement but no later than a 15-year equipment life. Other minor changes are proposed for clarity and consistency throughout the rule. Though these procedural changes are expected to improve compliance with Rule 1146, no physical changes to the affected equipment or facilities involved are expected from this portion of the proposed project.

Therefore, upon initial examination of the proposed amendments, only the amendments proposed in Rule 1146 for the reduction of the allowable NO<sub>x</sub> emission limits are expected to involve physical changes at affected facilities which may cause potentially significant impacts to “air quality” and “hazards and hazardous materials.” Therefore, the main focus of the analysis in this

Initial Study is the type of emission reduction projects that may be undertaken to comply with the proposed project (i.e. the decision to install ultra low-NOx burners or SCR). However, in addition to ultra low-NOx burners and SCR technology, the possibility of other types of NOx control technologies being used to comply with PAR 1146 will be further evaluated in the Draft EA.

Although there are other amendments proposed throughout PAR 1146 for continuity and clarity, for the aforementioned reasons, they are not expected to have an effect on emissions and, thus, will not be addressed further in this Initial Study. Therefore, the effects of implementing the reduced NOx emission limits will be the main focus of the analysis in this Initial Study.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>I. AESTHETICS.</b> Would the project:			
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Significance Criteria

The proposed project impacts on aesthetics will be considered significant if:

- The project will block views from a scenic highway or corridor.
- The project will adversely affect the visual continuity of the surrounding area.
- The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

### Discussion

**I. a), b) & c)** Implementation of PAR 1146 is expected to involve construction activities related to the modification of existing equipment by installing either ultra low-NOx burners or SCR systems at industrial, commercial, and institutional facilities. However, the construction activities are not expected to adversely impact views and aesthetics resources since most of the heavy equipment and activities are expected to occur within each facility and are expected to introduce only minor visual changes to areas outside each facility, if at all, depending on the location of the construction activities within the facility. The majority of the construction equipment is expected to be low in height and not substantially visible to the surrounding area due to existing fencing along the property lines and existing structures currently within the facilities that would buffer the views of the construction activities. Further, the construction

activities are expected to be temporary in nature and will cease following completion of the equipment installation or modifications.

Depending on the type of NOx emissions control employed (i.e., ultra low-NOx burners or SCR), the proposed project could potentially introduce minor visual changes at some facilities. The affected units, depending upon their locations within each facility, could potentially be visible to areas outside of each facility. However, the affected units are expected to be about the same size profile as existing equipment present at each affected facility. The general appearance of the affected units is not expected to differ significantly from other equipment units such that no significant impacts to aesthetics are expected. Further, no scenic highways or corridors are located in the vicinities of the affected facilities such that the proposed project would not obstruct scenic resources or degrade the existing visual character of a site, including but not limited to, trees, rock outcroppings, or historic buildings.

**I. d)** There are no components in PAR 1146 that would require construction activities to occur at night. Therefore, no additional lighting at the affected facilities would be required as a result of complying with PAR 1146. Similarly, the existing equipment subject to PAR 1146 are located in existing structures or areas that already have lighting systems in place. Further, PAR 1146 equipment are designed to be used up to 24 hours per day, so the equipment are not restricted to operate during a specific time of day. Thus, PAR 1146 contains no provisions that would require affected equipment to operate differently during existing daytime or nighttime operations. Therefore, PAR 1146 is not expected to create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. Therefore, the proposed project is not expected to create significant adverse aesthetic impacts.

Based upon these considerations, significant adverse impacts to aesthetics are not expected from the implementation of PAR 1146 and will not be further analyzed in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>II. AGRICULTURE RESOURCES.</b> Would the project:			
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

Project-related impacts on agricultural resources will be considered significant if any of the following conditions are met:

- The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
- The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
- The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural uses.

### Discussion

**II. a), b), & c)** All construction and operational activities that would occur as a result of implementing PAR 1146 are expected to occur within the confines of the existing affected facilities. The proposed project would be consistent with the commercial, industrial and institutional zoning requirements for the various facilities and there are no agricultural resources or operations on or near the affected facilities. No agricultural resources including Williamson Act contracts are located within or would be impacted by construction activities at the affected facilities. Therefore, the proposed project would not result in any new construction of buildings or other structures that would convert farmland to non-agricultural use or conflict with zoning for agricultural use or a Williamson Act contract. Since PAR 1146 would not substantially change the facility or process for which the affected units are utilized, there are no provisions in PAR 1146 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments and no land use or planning requirements relative to agricultural resources will be altered by the proposed project

Based upon these considerations, significant agricultural resource impacts are not expected from the implementation of the proposed project and will not be further analyzed in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>III. AIR QUALITY.</b> Would the project:			
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant Impact	No Impact
d) Expose sensitive receptors to substantial pollutant concentrations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

To determine whether or not air quality impacts from amending Rule 1146 may be significant, impacts will be evaluated and compared to the criteria in Table 2-1. If impacts exceed any of the criteria in Table 2-1, they will be considered further in the Draft EA. As necessary, all feasible mitigation measures will be identified in the Draft EA and implemented to reduce significant impacts to the maximum extent feasible.

### Discussion

Upon initial examination of the proposed amendments to Rule 1146, the portion of the proposed project that is the main focus of this analysis pertains to the proposed decrease in the allowable NO<sub>x</sub> emission standard for boilers, steam generators and process heaters with maximum rated heat input capacities greater than or equal to five MMBTU/hr. These equipment categories could feasibly undergo physical modifications such as installing ultra low-NO<sub>x</sub> burners or SCR in order to comply with the NO<sub>x</sub> emission reduction requirements in PAR 1146. In addition to ultra low-NO<sub>x</sub> burners and SCR technology, the possibility of other types of NO<sub>x</sub> control technologies being used to comply with PAR 1146 will be further evaluated in the Draft EA. The other proposed amendments in PAR 1146 are procedural in nature and will not result in an adverse air quality impact.

**III. a)** The SCAQMD is required by law to prepare a comprehensive district-wide AQMP which includes strategies (e.g., control measures) to reduce emission levels to achieve and maintain state and federal ambient air quality standards, and to ensure that new sources of emissions are planned and operated to be consistent with the SCAQMD's air quality goals. The AQMP's air pollution reduction strategies include control measures which target stationary, mobile and indirect sources. These control measures are based on feasible methods of attaining ambient air quality standards. Pursuant to the provisions of both the state and federal Clean Air Acts, the SCAQMD is required to attain the state and federal ambient air quality standards for all criteria pollutants, including NO<sub>x</sub> and PM<sub>10</sub>. PAR 1146 will not obstruct or conflict with the implementation of the AQMP.

**Table 2-1**  
**SCAQMD Air Quality Significance Thresholds**

Mass Daily Thresholds <sup>a</sup>		
Pollutant	Construction <sup>b</sup>	Operation <sup>c</sup>
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants <sup>d</sup>		
NO2  1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.25 ppm (state) 0.053 ppm (federal)	
PM10 24-hour average annual geometric average annual arithmetic mean	10.4 µg/m <sup>3</sup> (construction) <sup>e</sup> & 2.5 µg/m <sup>3</sup> (operation) 1.0 µg/m <sup>3</sup> 20 µg/m <sup>3</sup>	
PM2.5 24-hour average	10.4 µg/m <sup>3</sup> (construction) <sup>e</sup> & 2.5 µg/m <sup>3</sup> (operation)	
Sulfate 24-hour average	1 µg/m <sup>3</sup>	
CO  1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)	

<sup>a</sup> Source: SCAQMD CEQA Handbook (SCAQMD, 1993)

<sup>b</sup> Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).

<sup>c</sup> For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

<sup>d</sup> Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

<sup>e</sup> Ambient air quality threshold based on SCAQMD Rule 403.

KEY:    lbs/day = pounds per day                  ppm = parts per million                   $\mu\text{g}/\text{m}^3$  = microgram per cubic meter                   $\geq$  greater than or equal to



Although PAR 1146 has the potential to temporarily increase VOC, NO<sub>x</sub>, CO, PM<sub>10</sub> and TAC emissions (as diesel PM) that could exceed the air quality significance thresholds for construction activities, PAR 1146 is not expected to interfere with achieving 1.3 tons per day of NO<sub>x</sub> emission reductions by year 2017, which is consistent with the goals of the 2007 AQMP to achieve additional NO<sub>x</sub> emission reductions from stationary sources, which will assist in attaining state and federal PM<sub>2.5</sub> and ozone ambient air quality standards. Further, implementation of all other SCAQMD NO<sub>x</sub> rules along with AQMP control measures, when considered together, is expected to reduce NO<sub>x</sub> emissions throughout the region overall by 2020. Therefore, implementing PAR 1146 will not conflict or obstruct implementation of the AQMP.

**III. b)** The objective of the proposed project is to reduce NO<sub>x</sub> emissions from the various sizes of boilers, steam generators and process heaters with maximum rated heat input capacities greater than or equal to five MMBTU/hr. The proposed project is estimated to reduce emissions up to 1.3 tons per day of NO<sub>x</sub> by the end of 2017 from these affected units. Compliance with PAR 1146 is expected to be achieved by either replacing burners of the affected units with ultra low-NO<sub>x</sub> burners or the installing SCR.

Replacing burners means that the operator will remove the old burners and retrofit the existing unit with certified ultra low-NO<sub>x</sub> burners that have been demonstrated to comply with the NO<sub>x</sub> emission standard on a retrofit basis. Any operator that chooses to retrofit an existing unit with new ultra low-NO<sub>x</sub> burners in order to comply with PAR 1146 is not expected to construct any new buildings or other structures as part of the retrofit process. However, some physical modifications would be necessary and typically involve removing the old burners, installing new burners, and installing new or reworking existing flue gas ductwork.

Specifically, operators of affected facilities who choose to replace existing burners with ultra low-NO<sub>x</sub> burners will first need to pre-order and purchase the appropriate size, style and number of burners, shut down the combustion unit to let it cool, and change out the burners. The burner change out may involve a contractor or vendor to remove the bolts, possibly cut and re-weld metal seals and re-fire the burners for equipment start-up. Additional work may be necessary such as upgrading the operation control system or installing a fuel injection system with electronic controls. Once the ultra low-NO<sub>x</sub> burners are in place, the combustion equipment can be fired up and can operate with lower NO<sub>x</sub> emissions. Due to the relatively straightforward nature and ease of retrofitting existing equipment with ultra low-NO<sub>x</sub> burners, no heavy duty construction activities or equipment are anticipated. Thus, no, or minimal secondary construction impacts are anticipated from retrofitting equipment with ultra low-NO<sub>x</sub> burners and operational NO<sub>x</sub> emissions will be reduced overall.

However, if an operator chooses to comply with PAR 1146 by installing SCR, implementation of the proposed project could create both direct and indirect air quality impacts. Past projects involving SCR installation have typically resulted in the greatest amount of construction emissions for an individual project (i.e., potentially significant). In addition to the modifications or replacement of the combustion sources typical of other NO<sub>x</sub> control technologies, SCR systems may also require the installation of one or more storage tanks for aqueous ammonia, which is a chronic and acutely hazardous toxic air contaminant.

While the operational-related activities are simultaneously expected to reduce emissions of NO<sub>x</sub> and increase emissions of greenhouse gases (GHG) or toxic air contaminants resulting from

ammonia slip associated with the operation of SCR equipment, the construction-related activities are expected to generate emissions from worker vehicles, trucks, and construction equipment. Thus, the air quality impacts associated with the construction and operational phases of the proposed project are potentially significant and will be evaluated in the Draft EA.

**III. c)** The anticipated NO<sub>x</sub> emission reductions that would result from implementing PAR 1146 are expected to improve the overall air quality in the Basin by enhancing the probability of attaining and maintaining state and national ambient air quality standards for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>. However, the cumulative secondary impacts associated with reducing NO<sub>x</sub> have the potential for creating significant adverse project-specific air quality impacts that will be evaluated in the Draft EA

**III. d)** Emission sources associated with the construction-related activities as a result of implementing the proposed project may temporarily emit air contaminants. Further, emissions sources associated with the operational-related activities as a result of implementing the proposed project may emit a toxic air contaminant, ammonia, as ammonia slip. The impact of these emissions on sensitive populations, including individuals at hospitals, nursing facilities, daycare centers, schools, and elderly intensive care facilities, as well as residential and off-site occupational areas, will be evaluated in the Draft EA

**III. e)** The proposed project is not expected to create significant objectionable odors, either during construction or during operations. Specific to the installation of SCR equipment for various affected facilities, ammonia will be employed and it can have a strong odor. Nonetheless, the proposed project is not expected to generate substantial ammonia odors, since the affected facilities utilizing SCR technology will likely employ aqueous ammonia which will need to be stored in enclosed pressurized tanks.

Injection of ammonia into the flue gas often requires more ammonia than is necessary to achieve the desired NO<sub>x</sub> reduction. Unreacted ammonia passes or “slips” through the SCR reactor vessel and is released to the atmosphere, which is referred to as ammonia slip. Under normal operating and permitted conditions, ammonia slip is approximately five to 10 ppm. Because exhaust gases are hot, any ammonia slip emissions would be quite buoyant and would rapidly rise to higher altitudes without any possibility of lingering at ground level. The odor threshold of ammonia is one to five ppm, but because of the buoyancy of ammonia emissions and an average prevailing wind velocity of six miles per hour in the Basin, it is unlikely that ammonia slip emissions would exceed the odor threshold. Further, permits for installing SCR equipment will be subject to conditions that would specifically limit the amount of ammonia slip emitted.

Affected facilities employing the SCR equipment may also consider maintaining regular surveillance efforts to minimize the frequency and magnitude of odor events. For the installation of control equipment other than SCR, the use of BARCT also reduces the emissions of compounds that could otherwise generate odors. Therefore, no significant odor impacts are expected from the proposed project.

**III. f)** PAR 1146 will be required to comply with all applicable SCAQMD, CARB, and EPA rules and regulations. Thus, the proposed project is not expected to diminish an existing air quality rule or future compliance requirements. Further, adopting and implementing PAR 1146 enhances existing air pollution control rules that are expected to assist the SCAQMD in its

efforts to attain and maintain with a margin of safety the state and national ambient air quality standards for NO<sub>x</sub>.

Based upon these considerations, the air quality impacts associated with increased emissions of criteria air contaminants during the construction phase and the increased emissions of toxic air contaminants during the operation phase of the proposed project will be evaluated further in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>IV. BIOLOGICAL RESOURCES.</b> Would the project:			
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by §404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Significance Criteria**

Impacts on biological resources will be considered significant if any of the following criteria apply:

- The project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies.
- The project interferes substantially with the movement of any resident or migratory wildlife species.
- The project adversely affects aquatic communities through construction or operation of the project.

**Discussion**

**IV. a), b), c), & d)** PAR 1146 would only affect units operating at existing facilities located throughout the district. All of the affected units operating at existing facilities are located in industrial, commercial and institutional areas, which have already been greatly disturbed. In general, these areas currently do not support riparian habitat, federally protected wetlands, or migratory corridors. Additionally, special status plants, animals, or natural communities are not expected to be found within close proximity to the affected facilities. Therefore, the proposed project would have no direct or indirect impacts that could adversely affect plant or animal species or the habitats on which they rely in the SCAQMD's jurisdiction. The current and expected future land use development to accommodate population growth is primarily due to economic considerations or local government planning decisions. A conclusion in the Program Environmental Impact Report (EIR) for the 2007 AQMP was that population growth in the region would have greater adverse effects on plant species and wildlife dispersal or migration corridors in the basin than SCAQMD regulatory activities, (e.g., air quality control measures or regulations). The current and expected future land use development to accommodate population growth is primarily due to economic considerations or local government planning decisions.

**IV. e) & f)** The proposed project is not envisioned to conflict with local policies or ordinances protecting biological resources or local, regional, or state conservation plans. Land use and other planning considerations are determined by local governments and no land use or planning requirements will be altered by the proposed project. Additionally, the proposed project will not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or any other relevant habitat conservation plan, and would not create divisions in any existing communities because all activities associated with complying with PAR 1146 will occur at existing industrial, commercial and institutional facilities.

Based upon these considerations, significant biological resource impacts are not expected from the implementation of the proposed project and will not be further analyzed in the Draft EA.

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		Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>V. CULTURAL RESOURCES.</b>	Would the project:			
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b)	Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c)	Directly or indirectly destroy a unique paleontological resource, site, or feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d)	Disturb any human remains, including those interred outside a formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

Impacts to cultural resources will be considered significant if:

- The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group.
- Unique paleontological resources are present that could be disturbed by construction of the proposed project.
- The project would disturb human remains.

### Discussion

**V. a)** There are existing laws in place that are designed to protect and mitigate potential impacts to cultural resources. Since construction-related activities associated with the implementation of PAR 1146 are expected to be confined within the existing footprint of the affected facilities, no impacts to historical resources are expected to occur as a result of implementing the proposed project.

**V. b), c), & d)** Installing add-on controls and other associated equipment to comply with PAR 1146 will require disturbance of previously disturbed areas, i.e., existing industrial or commercial facilities. However, since construction-related activities are expected to be confined within the existing footprint of the affected facilities, PAR 1146 is not expected to require physical changes to the environment, which may disturb paleontological or archaeological resources. Furthermore, it is envisioned that these areas are already either devoid of significant cultural resources or whose cultural resources have been previously disturbed. Therefore, PAR 1146 has no potential to cause a substantial adverse change to a historical or archaeological resource, directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or disturb any human remains, including those interred outside a formal cemeteries. The proposed project is, therefore, not anticipated to result in any activities or promote any programs that could have a significant adverse impact on cultural resources in the district.

Based upon these considerations, significant cultural resources impacts are not expected from the implementation of the proposed project and will not be further analyzed in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>VI. ENERGY.</b> Would the project:			
a) Conflict with adopted energy conservation plans?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the need for new or substantially altered power or natural gas utility systems?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Create any significant effects on local or regional energy supplies and on requirements for additional energy?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create any significant effects on peak and base period demands for electricity and other forms of energy?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Comply with existing energy standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

Impacts to energy and mineral resources will be considered significant if any of the following criteria are met:

- The project conflicts with adopted energy conservation plans or standards.
- The project results in substantial depletion of existing energy resource supplies.
- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
- The project uses non-renewable resources in a wasteful and/or inefficient manner.

### Discussion

PAR 1146 would reduce emissions of NO<sub>x</sub> from various existing combustion sources at affected facilities. The expected options for compliance are either replacing burners with ultra low-NO<sub>x</sub> burners or installing add-on control equipment. Further, it is expected that the installation and operation of any equipment used to comply with PAR 1146 will also comply with all applicable existing energy standards.

**VI. a) & e)** PAR 1146 is not subject to any existing energy conservation plans. If a facility that is subject to PAR 1146 is also subject to energy conservation plans, it is not expected that PAR 1146 will affect in any way or interfere with that facility's ability to comply with its energy conservation plan or energy standards. Further, project construction and operation activities will not utilize non-renewable resources in a wasteful or inefficient manner.

**VI. b), c) & d.** Installation of SCR equipment to comply with PAR 1146 increases demand for energy used for operating pumps, fans, controllers, etc. Specifically, increased energy demand

from the SCR and associated equipment at full load is approximately 0.7 percent, according to a 1988 SCR demonstration project performed by Southern California Edison. At low loads, demands increased by up to seven percent, but vendors contacted by SCAQMD staff at the time indicated that the 0.7 percent increase in energy demand was more accurate. Any additional electricity required is typically either supplied by each affected facility's cogeneration units or by the local electrical utility, as appropriate, so it is not anticipated that new or substantially altered power utility systems will need to be built to accommodate any additional electricity demands created by the proposed project. No increase in natural gas use is expected for operations subject to the proposed project. Use of ultra low-NOx burners is expected to be a more efficient combustion option than continued use of existing burners, which could potentially reduce demand for natural gas at affected facilities.

Based upon these considerations, significant adverse impacts to energy are not expected from implementation of PAR 1146 and will not be evaluated further in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>VII. GEOLOGY AND SOILS.</b> Would the project:			
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:			
• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

Impacts on the geological environment will be considered significant if any of the following criteria apply:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.
- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

### Discussion

**VII. a)** Since PAR 1146 would result in construction activities in industrial, commercial, or institutional settings to replace burners with ultra low-NOx burners or to install control equipment, little site preparation is anticipated that could adversely affect geophysical conditions in the jurisdiction of the SCAQMD. Southern California is an area of known seismic activity. Accordingly, the installation of add-on controls at existing affected facilities to comply with PAR 1146 is expected to conform with the Uniform Building Code and all other applicable state and local building codes. As part of the issuance of building permits, local jurisdictions are responsible for assuring that the Uniform Building Code is adhered to and can conduct inspections to ensure compliance. The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represents the foundation condition at the site. The Uniform Building Code requirements also consider liquefaction potential and establish stringent requirements for building foundations in areas potentially subject to liquefaction. Thus, PAR 1146 would not alter the exposure of people or property to geological hazards such as earthquakes, landslides, mudslides, ground failure, or other natural hazards. As a result, substantial exposure of people or structures to the risk of loss, injury, or death involving the rupture of an earthquake fault, seismic ground shaking, ground failure or landslides is not anticipated and will not be further analyzed in the Draft EA.

**VII. b)** Since add-on controls will likely be installed at existing facilities, during construction of the proposed project, a slight possibility exists for temporary erosion resulting from excavating and grading activities, if required. These activities are expected to be minor since the existing facilities are generally flat and have previously been graded. Further, wind erosion is not



expected to occur to any appreciable extent, because operators at dust generating sites would be required to comply with the best available control measure (BACM) requirements of SCAQMD Rule 403 – Fugitive Dust. In general, operators must control fugitive dust through a number of soil stabilizing measures such as watering the site, using chemical soil stabilizers, revegetating inactive sites, etc. The proposed project involves the installation or modification of add-on control equipment for combustion sources at existing facilities, so that grading could be required to provide stable foundations. Potential air quality impacts related to grading are addressed elsewhere in this Initial Study. No unstable earth conditions or changes in geologic substructures are expected to result from implementing PAR 1146.

**VII. c)** Since the proposed project will affect existing facilities, it is expected that the soil types present at the affected facilities will not be further susceptible to expansion or liquefaction. Furthermore, subsidence is not anticipated to be a problem since only minor excavation, grading, or filling activities are expected occur at affected facilities. Additionally, the affected areas are not envisioned to be prone to new landslide impacts or have unique geologic features since the affected equipment units are located at existing facilities that are typically in industrial, commercial and institutional areas.

**VII. d) & e)** Since PAR 1146 will affect equipment units at existing facilities located in industrial, commercial or institutional zones, it is expected that people or property will not be exposed to new impacts related to expansive soils or soils incapable of supporting water disposal. Further, typically each affected facility has some degree of existing wastewater treatment systems that will continue to be used and are expected to be unaffected by PAR 1146. Sewer systems are available to handle wastewater produced and treated by each affected facility. Each existing facility affected by PAR 1146 does not require installation of septic tanks or alternative wastewater disposal systems. As a result, PAR 1146 will not require operators to utilize septic systems or alternative wastewater disposal systems. Thus, implementation of PAR 1146 will not adversely affect soils associated with a septic system or alternative wastewater disposal system.

Based upon these considerations, significant geology and soils impacts are not expected from the implementation of PAR 1146 and will not be further analyzed in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>VIII. HAZARDS AND HAZARDOUS MATERIALS.</b> Would the project:			
a) Create a significant hazard to the public or the environment through the routine transport, use, and disposal of hazardous materials?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset conditions involving the release of hazardous materials into the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant Impact	No Impact
c) Emit hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Significantly increased fire hazard in areas with flammable materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

Impacts associated with hazards will be considered significant if any of the following occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

### Discussion

**VIII. a) & b)** New air pollution control equipment (e.g., SCRs) and related components are expected to be installed at some of the affected facilities such that their operations may increase the quantity of hazardous materials (e.g. ammonia) used by the control equipment. In addition,

the shipping, handling, storing, and disposing of hazardous materials inherently poses a certain risk of a release to the environment. Thus, the routine transport of hazardous materials, use, and disposal of hazardous materials may increase as a result of implementing PAR 1146. Further, if the control option chosen by each affected facility is SCR, PAR 1146 may alter the transportation modes for ammonia feedstock to/from the existing facilities.

For these reasons, implementation of PAR 1146 may alter the hazards associated with the existing affected facilities. At many of the affected facilities, a number of hazardous materials are currently in use. In general, the major types of public safety risks evaluated consist of impacts resulting from toxic substance releases, fires, and explosions. Fire and explosion risks are not expected to be associated with PAR 1146.

Exposure to a toxic gas cloud is the potential hazard associated with SCR control equipment. A toxic gas cloud is the release of a volatile chemical such as anhydrous ammonia that could form a cloud and migrate off-site, thus exposing individuals. Anhydrous ammonia is heavier than air such that when released into the atmosphere, would form a cloud at ground level rather than be dispersed. "Worst-case" conditions tend to arise when very low wind speeds coincide with the accidental release, which can allow the chemicals to accumulate rather than disperse. Current SCAQMD policy no longer allows the use of anhydrous ammonia for air pollution control. Instead aqueous ammonia, 19 percent by volume is typically required as a permit condition associated with the installation of SCR equipment. As a result, hazards from toxic clouds are not expected to be associated with PAR 1146.

#### Hazards Due to Transport of Ammonia

The factors that enter into accident statistics include distance traveled and type of vehicle or transportation system. Factors affecting automobiles and truck transportation accidents include the type of roadway, presence of road hazards, vehicle type, maintenance and physical condition, and driver training. A common reference frequently used in measuring risk of an accident is the number of accidents per million miles traveled. Complicating the assessment of risk is the fact that some accidents can cause significant damage without injury or fatality and some accidents result in little or no property damage or personal injury. Additionally, not every truck accident is expected to result in an explosion or a release of hazardous substances.

Every time hazardous materials are moved from the site of generation, there is the potential for accidental release. A study conducted by the EPA indicates that the expected number of hazardous materials spills per mile shipped ranges from one in 100 million to one in one million, depending on the type of road and transport vehicle used. The EPA analyzed accident and traffic volume data from New Jersey, California, and Texas, using the Resource Conservation and Recovery Act Risk/Cost Analysis Model and calculated the accident rates presented in Table 2-2 (Los Angeles County, 1988). As shown in Table 2-2, the probability of an accidental release of ammonia during transport is extremely small.

**Table 2-2**  
**Truck Accident Rates for Cargo On Highways**

<b>Highway Type</b>	<b>Accidents Per 1,000,000 Miles</b>
Interstate	0.13
U.S. and State Highways	0.45
Urban Roadways	0.73
Composite*	0.28

Source: Environmental Protection Agency, 1984.

\* Average number for transport on interstates, highways, and urban roadways.

In addition to considering the probability of an accidental release, it is necessary to consider the consequences of an accidental release during transport. The 2004 Final EA for Regulation XX – RECLAIM evaluated specific hazards due to transport of aqueous ammonia to several local refineries. The 2004 Final EA concluded that in the unlikely even that a tanker truck would rupture and release the entire 7,000 gallon capacity of aqueous ammonia, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a road accident, the roads are usually graded and channeled to prevent water accumulation and a spill would be channeled to a low spot or drainage system, which would limit the surface area of the spill and the subsequent evaporative emissions. Additionally, the roadside surface may not be paved and may absorb some of the spill. In a typical release scenario, because of the characteristics of most roadways, the pooling effect on an impervious surface would not typically occur. As a result, the spilled ammonia would not be expected to evaporate into a toxic cloud at concentrations that could significantly adversely affect residences or other sensitive receptors in the area of the spill (SCAQMD, 2004).

Based on the low probability of an ammonia tanker truck accident with a major release and the potential for exposure to low concentrations, if any, the conclusion of the hazard analysis in the 2004 Final EA was that potential impacts due to an accidental release of aqueous ammonia during transportation are less than significant. It should be noted that the analysis in the 2004 Final EA is based on tanker trucks transporting aqueous ammonia in concentrations less than 19 percent by volume, which is consistent with SCAQMD permitting policy to limit the ammonia concentration to this level. For these reasons, the transportation of ammonia as a result of complying with PAR 1146 is not expected to be a significant hazards impact.

#### Hazards Due to Other Types of Accidental Releases of Ammonia

Another type of accidental release of ammonia could occur on-site at the facility is the ammonia storage tank ruptures. Whatever the size the storage tank will be, storage tanks constructed at affected facilities would also need to be surrounded by some form of secondary containment such as a dyke or berm. These same containment areas would also be required at truck loading racks to contain ammonia in the event of a spill during truck unloading activities. An accidental release of aqueous ammonia and subsequent evaporation of the released ammonia at the site of the facility would be captured in containment dykes or berms and, depending on the distance to the nearest receptor, could result in exposure to ammonia concentrations that exceed the SCAQMD's significant concentration level. Therefore, a potential hazards impacts related to an accidental release of aqueous ammonia at a facility as a result of implementing the proposed project are potentially significant and will be addressed in the Draft EA.

**VIII. c)** Some affected facilities may be located within one-quarter mile of a sensitive receptor (e.g., a day care center). Therefore, a potential for significant impacts from hazardous emissions or the handling of acutely hazardous materials, substances and wastes near sensitive-receptors may occur and will be addressed in the Draft EA.

**VIII. d)** Government Code §65962.5 refers to hazardous waste handling practices at facilities subject to the Resources Conservation and Recovery Act (RCRA). Construction activities associated with implementing PAR 1146 will occur within the confines of the existing affected facilities. Some of the affected facilities may be included on the list of the hazardous materials sites compiled pursuant to Government Code §65962.5. Hazardous wastes from these existing facilities are managed in accordance with applicable federal, state, and local rules and regulations. The types of additional waste expected to be generated from implementing PAR 1146 will consist primarily of additional catalyst used by the new SCR control devices. For those affected facilities which already use catalyst for other operational activities on-site, the additional collected spent catalyst will continue to be handled in the same manner as currently handled such that it will be disposed/recycled at approved facilities. Further, for the other affected facilities which are new to handling the catalyst waste, the same disposal/recycling procedures are expected to be followed. Accordingly, significant hazards impacts from the disposal/recycling of hazardous materials are not expected and will not be further analyzed in the Draft EA.

**VIII. e) & f)** Construction activities from implementing PAR 1146 are expected to occur within the existing confines of the affected facilities. However, some of these facilities may be located within two miles of an airport (either public or private) and are located within an airport land use plan. Nonetheless, the installation of SCR control devices is expected to be constructed according to the all appropriate building, land use and fire codes and operated at a low enough height relative to existing flight patterns so that the structure would not interfere with plane flight paths. Such codes are designed to protect the public from hazards associated with normal operation. Therefore, PAR 1146 is not expected to result in a safety hazard for people residing or working in the area of the affected facilities even within the vicinity of an airport and as such, will not be further analyzed in the Draft EA.

**VIII. g)** Emergency response plans are typically prepared in coordination with the local city or county emergency plans to ensure the safety of not only the public (surrounding local communities), but the facility employees as well. PAR 1146 would not impair implementation of, or physically interfere with any adopted emergency response plan or emergency evacuation plan. Any existing commercial, institutional or industrial facilities affected by PAR 1146 would typically already have their own emergency response plans in place. However, for those operators of affected facilities who elect to install SCR units may need to update their emergency response plan to reflect the new or increased use of ammonia on-site. Thus, PAR 1146 is not expected to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan and as such, will not be further analyzed in the Draft EA.

**VIII. h) & i)** The Uniform Fire Code and Uniform Building Code set standards intended to minimize risks from flammable or otherwise hazardous materials. Local jurisdictions are required to adopt the uniform codes or comparable regulations. Local fire agencies require permits for the use or storage of hazardous materials and permit modifications for proposed

increases in their use. Permit conditions depend on the type and quantity of the hazardous materials at the facility. Permit conditions may include, but are not limited to, specifications for sprinkler systems, electrical systems, ventilation, and containment. The fire departments make annual business inspections to ensure compliance with permit conditions and other appropriate regulations. Further, businesses are required to report increases in the storage or use of flammable and otherwise hazardous materials to local fire departments. Local fire departments ensure that adequate permit conditions are in place to protect against potential risk of upset.

PAR 1146 will not increase the existing risk of fire hazards in areas with flammable brush, grass, or trees. Additional natural gas may be used during the construction phase of the proposed project. Natural gas is currently used at several of the affected facilities. The hazards associated with natural gas would result in a torch fire in the event that a release occurred and caught fire. Because of the locations of each facility that would be affected by PAR 1146, a torch fire would be expected to remain on-site so that there would be no public exposure to the fire hazards. No substantial or native vegetation typically exists on or near the affected facilities (specifically because they could be a fire hazard) so PAR 1146 is not expected to expose people or structures to wild fires. Therefore, no significant increase in fire hazards are expected any of the affected facilities associated with implementing PAR 1146.

Based on these considerations, the potential hazards impacts related to the operations at each affected facility and the transport of hazardous materials associated with PAR 1146 will be addressed in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>IX. HYDROLOGY AND WATER QUALITY.</b>			
Would the project:			
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

		Potentially Significant Impact	Less Than Significant Impact	No Impact
d)	Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f)	Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j)	Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
k)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
l)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
m)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
n)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant Impact	No Impact
o) Require in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Significance Criteria

Potential impacts on water resources will be considered significant if any of the following criteria apply:

#### Water Quality:

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

#### Water Demand:

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use a substantial amount of potable water.
- The project increases demand for water by more than five million gallons per day.

### Discussion

**IX. a), f), k), l) & o)** Operators of facilities affected by PAR 1146 are expected to install new air pollution control equipment, such as SCR and replace existing burners with ultra low-NOx burners. However, no additional water demand or wastewater generation results from the operation of SCR systems or ultra low-NOx burners at stationary sources because these control technologies do not entail the use of water in the NOx control process. Construction activities associated with PAR 1146 may require the use of water as a dust suppressant if grading is required. However, the installation of these types of air pollution control equipment at existing facilities is not expected to require much, if any, additional grading. Other than possible grading for installing ammonia storage tanks as part of the installation of SCR units, most of the modifications would occur to the existing equipment (i.e., adding burners and flue gas ductwork). Initial estimates show that approximately eight facilities may choose to install SCR units and ammonia storage tanks. For a worst-case analysis, if all of these facilities require grading of one acre or less on an existing site, one 6,000 gallon capacity water truck per day per facility can be assumed as sufficient for dust control. Thus, the maximum amount of water which could potentially be used for dust control during construction would be 48,000 gallons per day. Therefore, implementation of PAR 1146 does not increase demand for water by more than



significance threshold of 5,000,000 gallons per day. In fact, a relatively minimal amount of water, if at all, is expected to be used for this purpose. Additionally, water used for dust suppression does not have to be of potable quality, but can be reclaimed water. Reclaimed water is currently available in many areas of the SCAQMD's jurisdiction. Thus, the impacts of PAR 1146 on each affected facility's wastewater discharge and the Industrial Wastewater Discharge Permit are expected to be less than significant.

**IX. b)** Implementation of PAR 1146 is not expected to significantly adversely affect the quantity or quality of groundwater in the area of each affected facility. No significant adverse impacts are expected to ground water quality from PAR 1146 because: 1) wastewater will continue to be collected and treated in each of the affected facility's wastewater treatment systems or in compliance with the current wastewater discharge permits, as applicable; 2) no underground storage tanks are expected to be constructed as part of PAR 1146; 3) containment berms will be required or may already exist around the new or modified units to minimize the potential for an ammonia spill to contaminate soil and groundwater; and, 4) any new storage tanks that may be proposed will be required to comply with BACT and other safety requirements such as double bottom and monitoring requirements.

**IX. c), d), e) & m)** Changes to each affected facility's storm water collection systems are expected to be less than significant since most of the changes will occur within existing units (i.e., replacing burners with ultra low-NOx burners or installing SCR control equipment). Further, typically most of the areas likely to be affected by PAR 1146 are currently paved and are expected to remain paved. Any new units constructed will be curbed and the existing units will remain curbed to contain any runoff. Any runoff occurring will continue to be handled by each affected facility's wastewater system and sent to an on-site wastewater treatment system prior to discharge. The surface water runoff is expected to be handled with each facility's current wastewater treatment system. Storm water runoff will be collected and discharged in accordance with each facility's discharge permit terms and conditions.

**IX. g), h), & i)** PAR 1146 is expected to involve construction and modification activities located within the confines of existing facilities and does not include the construction of any new housing so it would not place new housing within a 100-year flood hazard area. It is likely that most affected facilities are not located within a 100-year flood hazard area. Any affected facilities that may be located in a 100-year flood area could impede or redirect 100-year flood flows, but this would be considered part of the existing setting and not an effect of PAR 1146. Since PAR 1146 would not require locating new facilities within a flood zone, it is not expected that implementation of PAR 1146 would expose people or property to any known water-related flood hazards.

**IX. j)** PAR 1146 does not require construction of new facilities in areas that could be affected by tsunamis. Of the facilities affected by PAR 1146, some are located near the Ports of Long Beach, Los Angeles, and San Pedro. The port areas are protected from tsunamis by the construction of breakwaters. Construction of breakwaters combined with the distance of each facility from the water is expected to minimize the potential impacts of a tsunami or seiche so that no significant impacts are expected. PAR 1146 does not require construction of facilities in areas that are susceptible to mudflows (e.g., hillside or slope areas). Existing affected facilities that are currently located on hillsides or slope areas may be susceptible to mudflow, but this

would be considered part of the existing setting. As a result, PAR 1146 is not expected to generate significant adverse mudflow impacts.

**IX. n)** Each affected facility is expected to have sufficient water supplies available for implementing PAR 1146. Since the type of air pollution control equipment that would be installed at affected facilities does not use water as part of the control process, and limited water demand increases may occur for dust suppression during limited grading activities, the need for new or expanded water supply entitlements is not expected. Should any additional demand for clean water arise, the increase in water demand is expected to be within the available water supply for each affected facility as indicated by the MWD projections.

While it is not possible to predict water availability in the future, existing entitlements and resources in the district provide sufficient water supplies that currently exceed demand. According to the Metropolitan Water District (MWD), the largest supplier of water to California, MWD expects to be able to meet 100 percent of its member agencies' water needs for the next ten years, even during times of critical drought. MWD and its member agencies have identified and are implementing programs and projects to assure continued reliable water supplies for at least the next 20 years. MWD is expected to continue providing a reliable water supply through developing a portfolio of diversified water sources that includes: cooperative conservation; water recycling; and groundwater storage, recovery, and replenishment programs. Other additional water supplies will be supplied in the future as a result of water transfer from other water agencies, desalination projects and state and federal water initiatives, such as CALFED and California's Colorado River Water Use Plan. (Metropolitan Water District Annual Progress Report to the California's State Legislature, February 2002.)

Based upon these considerations, the potential hydrology and water quality impacts, especially those associated with wastewater discharge, storm water discharge, and water demand are expected to be less than significant and will not be evaluated in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>X. LAND USE AND PLANNING.</b> Would the project:			
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by local jurisdictions.

### Discussion

**X. a)** PAR 1146 does not require construction of new facilities, but any physical effects will occur at existing facilities and, thus, implementing PAR 1146 will not result in physically dividing any established communities.

**X. b) & c)** There are no provisions in PAR 1146 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments and no land use or planning requirements will be altered by PAR 1146. Further, PAR 1146 would be consistent with the typical industrial, commercial, and institutional zoning of the affected facilities. Typically, all proposed construction activities are expected to occur within the confines of the existing facilities. PAR 1146 would not affect in any way habitat conservation or natural community conservation plans, agricultural resources or operations, and would not create divisions in any existing communities. Further, no new development or alterations to existing land designations will occur as a result of the implementation of PAR 1146. Therefore, present or planned land uses in the region will not be affected as a result of PAR 1146.

Based upon these considerations, significant land use planning impacts are not expected from the implementation of PAR 1146, and thus, will not be further analyzed in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>XI. MINERAL RESOURCES.</b> Would the project:			
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

Project-related impacts on mineral resources will be considered significant if any of the following conditions are met:

- The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

## Discussion

**XI. a) & b)** There are no provisions in PAR 1146 that would result in the loss of availability of a known mineral resource of value to the region and the residents of the state such as aggregate, coal, clay, shale, et cetera, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Based upon these considerations, significant mineral resource impacts are not expected from the implementation of PAR 1146, and thus, will not be further analyzed in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>XII. NOISE.</b> Would the project result in:			
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airship, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## Significance Criteria

Impacts on noise will be considered significant if:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant

if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.

- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

### Discussion

**XII. a), b), c), & d)** Modifications or changes associated with the implementation of PAR 1146 will take place at existing facilities that are located in industrial, commercial and institutional settings. The existing noise environment at each of the affected facilities is typically dominated by noise from existing equipment onsite, vehicular traffic around the facilities, and trucks entering and exiting facility premises. Construction activities associated with implementing PAR 1146 may generate some noise associated with the use of construction equipment and construction-related traffic in the event that grading for the installation of new ammonia tanks, for example, is necessary. However, noise from the proposed project is not expected to produce noise in excess of current operations at each of the existing facilities. If SCR control devices are installed, the operations phase of PAR 1146 implementation may add new sources of noise to each affected facility. However, it is expected that each facility affected will comply with all existing noise control laws or ordinances. Further, Occupational Safety and Health Administration (OSHA) and California-OSHA (Cal/OSHA) have established noise standards to protect worker health. These potential noise increases are expected to be small, if at all, and thus less than significant. Therefore, potential noise impacts will not be further evaluated in the Draft EA.

**XII. e) & f)** Though some of the facilities affected by PAR 1146 are located at sites within an airport land use plan, or within two miles of a public airport, the addition of SCR control equipment would not expose people residing or working in the project area to the same degree of excessive noise levels associated with airplanes. All noise producing equipment must comply with local noise ordinances and applicable OSHA or Cal/OSHA workplace noise reduction requirements.

Based upon these considerations, significant noise impacts are not expected from the implementation of PAR 1146 and will not be further analyzed in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>XIII. POPULATION AND HOUSING.</b> Would the project:			
a) Induce substantial growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

		Potentially Significant Impact	Less Than Significant Impact	No Impact
b)	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c)	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

Impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:

- The demand for temporary or permanent housing exceeds the existing supply.
- The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.

### Discussion

**XIII. a)** Minor construction activities associated with PAR 1146 at each affected facility are not expected to involve the relocation of individuals, require new housing or commercial facilities, or change the distribution of the population. The reason for this conclusion is that operators of affected facilities who need to perform any construction activities to comply with PAR 1146 can draw from the existing labor pool in the local southern California area. Further, it is not expected that replacing existing burners with new ultra low-NO<sub>x</sub> burners or installing air pollution control equipment will require new employees during operation of the equipment. In the event that new employees are hired, it is expected that the number of new employees at any one facility would be small. Human population within the jurisdiction of the SCAQMD is anticipated to grow regardless of implementing PAR 1146. As a result, PAR 1146 is not anticipated to generate any significant adverse effects, either direct or indirect, on population growth in the district or population distribution.

**XIII. b) & c)** Because PAR 1146 includes modifications and/or changes at existing facilities located in industrial, commercial and institutional settings, PAR 1146 is not expected to result in the creation of any industry that would affect population growth, directly or indirectly induce the construction of single- or multiple-family units, or require the displacement of people or housing elsewhere in the district.

Based upon these considerations, significant population and housing impacts are not expected from the implementation of PAR 1146 and will not be further evaluated in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>XIV. PUBLIC SERVICES.</b> Would the proposal result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:			
a) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

Impacts on public services will be considered significant if the project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives.

### Discussion

**XIV. a) & b)** Implementation of PAR 1146 by replacing existing burners with ultra low-NOx burners or installing SCR control devices is anticipated to continue current operations at existing affected facilities. PAR 1146 may result in greater demand for ammonia, which will need to be transported to the affected facilities that install SCR and stored onsite prior to use. In the event of an accidental release fire departments are typically first responders for control and clean-up and police may be need to be available to maintain perimeter boundaries. Further, based on the low probability of accidents occurring, as shown in Table 2-2, PAR 1146 is not expected to increase the need or demand for additional public services (e.g., fire departments, police departments, schools, parks, government, et cetera) above current levels.

**XIV. c) & d)** As noted in the previous "Population and Housing" discussion, PAR 1146 is not expected to induce population growth in any way because the local labor pool (e.g., workforce) is expected to be sufficient to accommodate any construction activities that may be necessary at affected facilities and operation of new SCR control equipment is not expected to require additional employees. Therefore, there will be no increase in local population and thus no impacts are expected to local schools or parks.

**XIV. e)** PAR 1146 is expected to result in the use of new add-on control equipment (SCR control devices). Besides permitting the equipment or altering permit conditions by the SCAQMD, there is no need for other types of government services. PAR 1146 would not result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives. There will be no increase in population and, therefore, no need for physically altered government facilities.

Based upon these considerations, significant public services impacts are not expected from the implementation of PAR 1146 and will not be further evaluated in the Draft EA.

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	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>a) RECREATION.</b>			
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Significance Criteria

Impacts to recreation will be considered significant if:

- The project results in an increased demand for neighborhood or regional parks or other recreational facilities.
- The project adversely effects existing recreational opportunities.

### Discussion

**XV. a) & b)** As discussed previously under “Land Use,” there are no provisions in PAR 1146 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments; no land use or planning requirements will be altered by the proposed project. Further, PAR 1146 would not increase the use of existing neighborhood and regional parks or other recreational facilities or include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment because PAR 1146 is not expected to induce population growth.

Based upon these considerations, significant public services impacts are not expected from the implementation of PAR 1146 and will not be further evaluated in the Draft EA.

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	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>XVI. SOLID/HAZARDOUS WASTE.</b> Would the project:			
a) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Comply with federal, state, and local statutes and regulations related to solid and hazardous waste?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Significance Criteria

The proposed project impacts on solid/hazardous waste will be considered significant if the following occurs:

- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

### Discussion

**XVI. a)** PAR 1146 is expected to slightly increase the quantity of waste generated at the affected facilities that replace existing burners with ultra low-NOx burners and install new SCR units. The waste is associated with solid materials from construction activities associated with any air pollution control equipment or other related components being replaced, as applicable, and spent catalysts generated from SCR units expected to be installed at eight facilities, and may result in a relatively slight, incremental increase in the total waste generated by each affected facility.

Solid or hazardous wastes generated from construction-related activities would consist primarily of materials from the demolition of existing air pollution control equipment and construction associated with new air pollution control equipment. Construction-related waste would be disposed of at a Class II (industrial) or Class III (municipal) landfill. There are 48 Class II/Class III landfills within the SCAQMD's jurisdiction. The estimated total capacity of these landfills is approximately 111,198 tons per day (SCAQMD, 2000).

However, it is expected that some affected facilities will address the increase in waste through existing waste minimization plans. In addition, other affected facilities that have existing catalyst-based operations currently regenerate, reclaim or recycle the catalysts, in lieu of disposal. Moreover, due to the heavy metal content and its relatively high cost, catalyst recycling can be a lucrative choice.

Depending on operating conditions, it is expected that spent catalysts would be reclaimed and recycled approximately every five years, the typical life-span of catalysts used in SCR applications, though it is possible that spent catalysts could be disposed of. The composition of the catalyst will determine in which type of landfill a catalyst would be disposed. There are two main types of catalysts: one in which the catalyst is coated onto a metal structure and a ceramic-based catalyst onto which the catalyst components are calcified.

Catalysts with a metal structure would not normally be considered a hazardous waste. Instead, it would be considered a metal waste, like copper pipes, and, therefore, would not be a regulated waste requiring disposal in a Class I landfill unless it is friable or brittle. Ceramic-based catalysts are not considered friable or brittle because they typically include a fiber binding material in the catalyst material. In both cases, spent catalyst would not require disposal in a Class I landfill. Furthermore, typical catalyst materials are not considered to be water soluble, which also means they would not require disposal in a Class I landfill.

Based on the preceding discussion, it is likely that spent catalysts would be considered a “designated waste,” which is characterized as a non-hazardous waste consisting of, or containing pollutants that, under ambient environmental conditions, could be released at concentrations in excess of applicable water objectives, or which could cause degradation of the waters of the state (California Code of Regulations, Title 23, Chapter 3 Subparagraph 2522(a)(1)). Depending on its actual waste designation, spent catalysts would likely be disposed of in a Class II landfill or a Class III landfill that is fitted with liners. According to the Program EIR for the 2007 AQMP (SCAQMD, 2007), total Class III landfill waste disposal capacity in the district is approximately 97,269 tons per day, many of which have liners and can handle Class II and Class III wastes.

Disposal of spent catalyst would typically involve crushing the material and encasing it in concrete prior to disposal. Since it is expected that most spent catalysts will be recycled and regenerated, it is anticipated that there will be sufficient landfill capacity in the district to accommodate disposal of any spent catalyst materials. Thus, the potential increase of solid waste generated by the air pollution control equipment operated at eight of the affected facilities that are expected to install SCR as a result of PAR 1146 may not necessarily be disposed of and, therefore, is not expected to exceed the capacity of designated landfills available to each affected facility.

**XVI. b)** Implementing PAR 1146 is not expected to hinder in any way any affected facility’s ability to comply with existing federal, state, and local regulations related to solid and hazardous wastes.

Based upon these considerations, significant solid/hazardous waste impacts are not expected from the implementation of PAR 1146 and will not be further evaluated in the Draft EA.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>XVII. TRANSPORTATION/TRAFFIC.</b> Would the project:			
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant Impact	No Impact
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Significance Criteria

Impacts on transportation/traffic will be considered significant if any of the following criteria apply:

- Peak period levels on major arterials are disrupted to a point where level of service (LOS) is reduced to D, E or F for more than one month.
- An intersection's volume to capacity ratio increase by 0.02 (two percent) or more when the LOS is already D, E or F.
- A major roadway is closed to all through traffic, and no alternate route is available.
- There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- The demand for parking facilities is substantially increased.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.
- The need for more than 350 employees
- An increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round trips per day
- Increase customer traffic by more than 700 visits per day.

### Discussion

**XVII. a) & b)** Construction activities resulting from implementing PAR 1146 may generate a slight, albeit temporary, increase in traffic in the areas of each affected facility associated with construction workers, construction equipment, and the delivery of construction materials. However, PAR 1146 is not expected to cause a significant increase in traffic relative to the existing traffic load and capacity of the street systems surrounding the affected facilities because a small number of construction workers are expected to work at any one facility. Also, PAR 1146 is not expected to exceed, either individually or cumulatively, the current level of service of

the areas surrounding the affected facilities. The work force at each affected facility is not expected to significantly increase as a result of PAR 1146 and operation-related traffic is expected to be minimal. Thus, the traffic impacts will not be evaluated further in the Draft EA.

**XVII. c)** Though some of the facilities that will be affected by PAR 1146 are located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, actions that would be taken to comply with PAR 1146, such as installing SCR control equipment, are not expected to significantly influence or affect air traffic patterns. Further, the size and type of air pollution control devices that would be installed would not be expected to affect navigable air space. Thus, PAR 1146 would not result in a change in air traffic patterns including an increase in traffic levels or a change in location that results in substantial safety risks.

**XVII. d) & e)** The siting of each affected facility is consistent with surrounding land uses and traffic/circulation in the surrounding areas of the affected facilities. Thus, PAR 1146 is not expected to substantially increase traffic hazards or create incompatible uses at or adjacent to the affected facilities. Aside from the temporary effects due to a slight increase in truck traffic for those facilities that will undergo construction activities during installation of air pollution control equipment, PAR 1146 is not expected to alter the existing long-term circulation patterns. PAR 1146 is not expected to require a modification to circulation, thus, no long-term impacts on the traffic circulation system are expected to occur. Further, PAR 1146 does not involve construction of any roadways, so there would be no increase in roadway design feature that could increase traffic hazards. Emergency access at each affected facility is not expected to be impacted by PAR 1146. Further, each affected facility is expected to continue to maintain their existing emergency access gates.

**XVII. f)** Each affected facility will be required to provide parking for the construction workers, as applicable, either on or within close proximity to each facility. No additional parking will be needed after completion of the construction phase because the work force at each facility is not expected to significantly increase as a result of implementing PAR 1146.

**XVII. g)** Construction and operation activities resulting from implementing PAR 1146 are not expected to conflict with policies supporting alternative transportation since PAR 1146 does not involve or affect alternative transportation modes (e.g. bicycles or buses) because the construction and operation activities related to PAR 1146 will occur solely in existing industrial, commercial, and institutional areas.

Based upon these considerations, significant transportation/traffic impacts are not expected from the implementation of PAR 1146 and will not be further evaluated in the Draft EA.

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	Potentially Significant Impact	Less Than Significant Impact	No Impact
<b>XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.</b>			
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Discussion

**XVIII. a)** PAR 1146 is not expected to reduce or eliminate any plant or animal species or destroy prehistoric records of the past. Each site affected by PAR 1146 is part of an existing facility, which has been previously graded, such that PAR 1146 is not expected to extend into environmentally sensitive areas.

**XVIII. b)** The Environmental Checklist indicates that PAR 1146 has potentially significant adverse impacts on air quality and hazards and hazardous materials. The potential for cumulative impacts on these resources will be evaluated in the Draft EA.

**XVIII. c)** PAR 1146 may result in emissions of regulated air pollutants and may also increase the hazards at some of the affected facilities. The potential for these impacts to have adverse impacts on human beings, either directly or indirectly, will be evaluated in the Draft EA.

## **APPENDIX A**

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### **PROPOSED AMENDED RULE 1146**

(Adopted September 9, 1988)(Amended January 6, 1989)  
(Amended May 13, 1994)(Amended June 16, 2000)  
(Amended November 17, 2000)([January 29, 2008](#))

**RULE 1146. EMISSIONS OF OXIDES OF NITROGEN FROM  
INDUSTRIAL, INSTITUTIONAL, AND COMMERCIAL  
BOILERS, STEAM GENERATORS, AND PROCESS  
HEATERS**

**(a) Applicability**

This rule applies to boilers, steam generators, and process heaters of equal to or greater than 5 million Btu per hour rated heat input capacity used in all industrial, institutional, and commercial operations with the exception of:

- (1) boilers used by electric utilities to generate electricity; and
- (2) boilers and process heaters with a rated heat input capacity greater than 40 million Btu per hour that are used in petroleum refineries; and
- (3) sulfur plant reaction boilers.

**(ab) Definitions**

- (1) ANNUAL CAPACITY FACTOR means the ratio of the amount of fuel burned by a unit in a calendar year to the amount of fuel it could have burned if it had operated at the rated heat input capacity for 100 percent of the time during the calendar year.
- (2) ANNUAL HEAT INPUT means the actual amount of heat released by fuels burned in a unit during a calendar year.
- (3) BOILER or STEAM GENERATOR means any combustion equipment fired with liquid and/or gaseous and/or solid fossil fuel and used to produce steam or to heat water and that is not used exclusively to produce electricity for sale. Boiler or Steam Generator does not include any waste heat recovery boiler that is used to recover sensible heat from the exhaust of a combustion turbine or any unfired waste heat recovery boiler that is used to recover sensible heat from the exhaust of any combustion equipment.
- (4) BTU means British thermal unit.
- (5) GROUP I UNIT means any unit burning gaseous fuels with a rated heat input greater than or equal to 75 million Btu per hour.

- (6) GROUP II UNIT means any unit burning gaseous fuels, excluding digester and landfill gases, with a rated heat input less than 75 million Btu per hour down to and including 20 million Btu per hour.
- (7) GROUP III UNIT means any unit burning gaseous fuels, excluding digester and landfill gases, with a rated heat input less than 20 million Btu per hour down to and including 5 million Btu per hour, and all load-following units and units operated at schools and universities.
- (58) HEAT INPUT means the chemical heat released due to fuel combustion in a unit, using the higher heating value of the fuel. This does not include the sensible heat of incoming combustion air.
- (9) LOAD-FOLLOWING UNIT means a unit with normal operational load fluctuations and requirements which exceed the operational response range of an Ultra-Low NOx burner system(s) operating at 9 ppmv NOx. The operator shall designate load-following units on the Permit to Operate.
- (610) NOx EMISSIONS means the sum of nitric oxide and nitrogen dioxide in the flue gas, collectively expressed as nitrogen dioxide.
- (711) PROCESS HEATER means any combustion equipment fired with liquid and/or gaseous and/or solid fossil fuel and which transfers heat from combustion gases to water or process streams. Process Heater does not include any kiln or oven used for drying, curing, baking, cooking, calcining, or vitrifying; or any unfired waste heat recovery heater that is used to recover sensible heat from the exhaust of any combustion equipment.
- (812) RATED HEAT INPUT CAPACITY means the heat input capacity specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified such that its maximum heat input is different than the heat input capacity specified on the nameplate, the new maximum heat input shall be considered as the rated heat input capacity.
- (913) SCHOOL means any public or private school, including juvenile detention facilities with classrooms, used for purposes of the education of more than 12 children at the school, including in kindergarten and grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes. The term includes any building or structure, playground, athletic field, or other area of school property, but does not include unimproved school property.



(14) STANDBY BOILER is a boiler which operates as a temporary replacement for primary steam or hot water while the primary steam or hot water supply unit is out-of-service.

(1015) THERM means 100,000 Btu.

(1116) UNIT means any boiler, steam generator, or process heater as defined in paragraph (ab)(3) or (ab)(711) of this subdivision.

**(b) Applicability**

**This rule applies to boilers, steam generators, and process heaters of equal to or greater than 5 million Btu per hour rated heat input capacity used in all industrial, institutional, and commercial operations with the exception of:**

- (1) boilers used by electric utilities to generate electricity; and**
- (2) boilers and process heaters with a rated heat input capacity greater than 40 million Btu per hour that are used in petroleum refineries; and**
- (3) sulfur plant reaction boilers.**

**(c) Requirements**

**(1) The owner or operator shall subject all of the units within the facility to the requirements specified in Table 1146-1:**

**Table 1146-1 – Standard Compliance Limits and Schedule**

<b><u>Rule Reference</u></b>	<b><u>Category</u></b>	<b><u>Limit</u></b>	<b><u>Compliance Plan</u></b>	<b><u>Permit to Construct</u></b>	<b><u>Full Compliance</u></b>
<b><u>(c)(1)(A)</u></b>	<b><u>All Units Fired on Gaseous Fuels</u></b>	<b><u>30 ppm or 0.036 lbs/10<sup>6</sup> Btu</u></b>	<b><u>=</u></b>	<b><u>=</u></b>	<b><u>(date of adoption)</u></b>
<b><u>(c)(1)(B)</u></b>	<b><u>Any Units Fired on Non-gaseous Fuels</u></b>	<b><u>40 ppm</u></b>	<b><u>=</u></b>	<b><u>=</u></b>	<b><u>(date of adoption)</u></b>
<b><u>(c)(1)(C)</u></b>	<b><u>Any Units Fired on Landfill Gas</u></b>	<b><u>25 ppm</u></b>	<b><u>=</u></b>	<b><u>=</u></b>	<b><u>January 1, 2015</u></b>
<b><u>(c)(1)(D)</u></b>	<b><u>Any Units Fired on Digester Gas</u></b>	<b><u>15 ppm</u></b>	<b><u>=</u></b>	<b><u>=</u></b>	<b><u>January 1, 2015</u></b>
<b><u>(c)(1)(E)</u></b>	<b><u>Group I Units</u></b>	<b><u>5 ppm or 0.0062 lbs/10<sup>6</sup> Btu</u></b>	<b><u>=</u></b>	<b><u>January 1, 2010</u></b>	<b><u>January 1, 2011</u></b>
<b><u>(c)(1)(F)</u></b>	<b><u>Group II Units</u></b>	<b><u>9 ppm or 0.011 lbs/10<sup>6</sup> Btu</u></b>	<b><u>January 1, 2011</u></b>	<b><u>January 1, 2011</u></b>	<b><u>January 1, 2012</u></b>
	<b><u>75% or more of units (by heat input)</u></b>				
<b><u>(c)(1)(G)</u></b>	<b><u>Group II Units</u></b>	<b><u>12 ppm or 0.015 lbs/10<sup>6</sup> Btu</u></b>	<b><u>January 1, 2011</u></b>	<b><u>January 1, 2013</u></b>	<b><u>January 1, 2014</u></b>
	<b><u>100% of units (by heat input)</u></b>				
<b><u>(c)(1)(H)</u></b>	<b><u>Group III Units</u></b>	<b><u>12 ppm or 0.015 lbs/10<sup>6</sup> Btu</u></b>	<b><u>January 1, 2012</u></b>	<b><u>January 1, 2012</u></b>	<b><u>January 1, 2013</u></b>
	<b><u>75% or more of units (by heat input)</u></b>				
<b><u>(c)(1)(I)</u></b>	<b><u>Group III Units</u></b>	<b><u>12 ppm or 0.015 lbs/10<sup>6</sup> Btu</u></b>	<b><u>January 1, 2012</u></b>	<b><u>January 1, 2014</u></b>	<b><u>January 1, 2015</u></b>
	<b><u>100% of units (by heat input)</u></b>				

- (2) In lieu of complying with the requirements specified in paragraph (c)(1), the owner or operator may elect to subject all of the units within the facility to the requirements specified in Table 1146-2:

**Table 1146-2 – Enhanced Compliance Limits and Schedule**

<b><u>Rule Reference</u></b>	<b><u>Category</u></b>	<b><u>Limit</u></b>	<b><u>Compliance Plan</u></b>	<b><u>Permit to Construct</u></b>	<b><u>Full Compliance</u></b>
<u>(c)(2)(A)</u>	<u>Group II Units</u> <u>75% or more of units (by heat input)</u>	<u>5 ppm or 0.062</u> <u>lbs/10<sup>6</sup> Btu</u>	<u>January 1, 2013</u>	<u>January 1, 2013</u>	<u>January 1, 2014</u>
<u>(c)(2)(B)</u>	<u>Group II Units</u> <u>100% or more of units (by heat input)</u>		<u>January 1, 2013</u>	<u>January 1, 2015</u>	<u>January 1, 2016</u>
<u>(c)(2)(C)</u>	<u>Group III Units</u> <u>75% or more of units (by heat input)</u>	<u>9 ppm or 0.011</u> <u>lbs/10<sup>6</sup> Btu</u>	<u>January 1, 2014</u>	<u>January 1, 2014</u>	<u>January 1, 2015</u>
<u>(c)(2)(D)</u>	<u>Group III Units</u> <u>100% or more of units (by heat input)</u>		<u>January 1, 2014</u>	<u>January 1, 2016</u>	<u>January 1, 2017</u>

- (1) ~~The owner or operator of any unit(s) with a rated heat input capacity greater than 40 million Btu per hour and with greater than 25% annual capacity factor burning gaseous and/or non-gaseous fuels, shall not discharge into the atmosphere NO<sub>x</sub> emissions, in excess of 30 ppm or 0.036 pound per 10<sup>6</sup> Btu of heat input.~~
- (2) ~~The owner or operator shall not discharge into the atmosphere NO<sub>x</sub> emissions in excess of 40 ppm or 0.052 pound per 10<sup>6</sup> Btu of heat input for any unit(s) with a rated heat input capacity:~~
- ~~(A) greater than or equal to 5 million Btu per hour burning non-gaseous fuels, excluding units subject to (c)(1); or~~
  - ~~(B) greater than or equal to 5 million Btu per hour and less than 40 million Btu per hour burning gaseous or a combination of gaseous and non-gaseous fuels; or~~
  - ~~(B) greater than or equal to 40 million Btu per hour with a rated heat input less than or equal to 25 percent burning a gaseous or a combination of gaseous and non-gaseous fuels.~~
- (3) For dual fuel co-fired combustion a weighted average limit calculated by Equation 1146-1 may be used provided a totalizing fuel flow meter is

installed pursuant to paragraph (c)(8), for units burning a combination of both fuels.

$$\text{Weighted Limit} = \frac{(CL_A \times Q_A) + (CL_B \times Q_B)}{Q_A + Q_B} \quad \text{Equation 1146-1}$$

**Where:**

CL<sub>A</sub> = compliance limit for fuel A

CL<sub>B</sub> = compliance limit for fuel B

Q<sub>A</sub> = heat input from fuel A

Q<sub>B</sub> = heat input from fuel B

~~On and after January 1, 2002, the owner or operator of any unit(s) with a rated heat input capacity greater than or equal to 10 million Btu per hour shall not discharge into the atmosphere NO<sub>x</sub> emissions in excess of:~~

~~(A) — 30 ppm or 0.036 pound per 10<sup>6</sup> Btu of heat input for units burning gaseous fuels; or~~

~~(B) — 30 ppm or 0.036 pound per 10<sup>6</sup> Btu of heat input, or a weighted average limit calculated using Equation 1, provided a totalizing fuel flow meter is installed pursuant to paragraph (c)(10), for units burning a combination of gaseous and non-gaseous fuels.~~

$$\text{Weighted Limit} = \frac{(30 \text{ ppmv} \times x) + (40 \text{ ppmv} \times y)}{x + y} \quad \text{Equation 1}$$

**Where:** ~~x = annual heat input from gaseous fuel~~

~~y = annual heat input from non-gaseous fuel~~

- ~~(4) On and after July 1, 2002, the owner or operator of any unit(s) with a rated heat input capacity greater than or equal to 5 million Btu per hour and less than 10 million Btu per hour, shall not discharge into the atmosphere NO<sub>x</sub> emissions in excess of the emission limits specified in subparagraphs (c)(3)(A) and (c)(3)(B) as applicable.~~

- (4) In lieu of complying with the requirements specified in subparagraphs specified in Tables 1146-1 and 1146-2, the owner or operator of any unit

may operate the unit in a manner that does not exceed the emission concentration limits specified in equation 1146-2 provided that such units are specified on the Permit to Operate.

$$\underline{CL_a = CL \times ECF}$$

**Equation 1146-2**

Where,

CL<sub>a</sub> is the adjusted concentration, ppm

CL is the concentration limit specified in subparagraphs (c)(1)(E) through (c)(1)(I) or paragraph (c)(2), ppm

ECF is the efficiency correction factor.

The ECF shall be 1.0 unless:

- (i) The unit's operator has measured the unit's specific efficiency (EF<sub>a</sub>), in compliance with ASME Performance Test Code PTC 4 – 1998, at the average firing rate of the unit; and
- (ii) The ECF-corrected emission limit is made a condition of the unit's Permit to Operate.

The ECF is calculated as follows:

$$\underline{ECF = \frac{[Measured\ EF_a,\ \%]}{[Benchmark,\ \%]}}$$

**Equation 1146-3**

ECF shall not be less than 1.0.

- (5) The owner or operator of any unit(s) with an heat input capacity greater than or equal to 5 million Btu per hour ~~and subject to (e)(1), (e)(2), (e)(3), or (e)(4)~~ shall not discharge into the atmosphere carbon monoxide (CO) emissions in excess of 400 ppm.

- (6) In lieu of complying with the applicable emission limits specified in paragraphs (c)(1), (c)(2), and (c)(3), ~~t~~The owner or operator of any unit(s) in operation prior to (date of adoption) ~~with a rated heat input capacity greater than or equal to 5 million Btu per hour and~~ an annual heat input less than or equal to  $9.0 \times 10^9$  Btu (90,000 therms) per year, shall:
- (A) operate the unit(s) in a manner that maintains stack gas oxygen concentrations at less than or equal to 3 percent on a dry basis for any 15-consecutive-minute averaging period; or
  - (B) tune the unit(s) at least twice per year, (at intervals from 4 to 8 months apart) in accordance with the procedure described in Attachment 1 or the unit manufacturer's specified tune-up procedure. If a different tune-up procedure from that described in Attachment 1 is used then a copy of this procedure shall be kept on site. The operator of any unit(s) selecting the tune-up option shall maintain records for a rolling of twenty four month period verifying that the required tune-ups have been performed. If the unit does not operate throughout a continuous six-month period within a twelve month period~~calendar year~~, only one tuneup is required for the twelve month period that includes the entire period of non-operation~~that calendar year~~. For this case, the tune-up shall be conducted within thirty (30) days of start-up. ~~The operator of any unit(s) who specifies the tuneup option shall maintain a record for a period of two years verifying that the tuneup has been performed.~~ No tune-up is required during a rolling twelve month period~~calendar year~~ for any unit that is not operated during that rolling twelve month period~~calendar year~~; this unit may be test fired to verify availability of the unit for its intended use but once the test firing is completed the unit shall be shutdown. Records of test firings shall be maintained for a rolling twenty four month period~~of two years~~, and shall be made accessible to an authorized District representative upon request; ~~or meet the applicable NO<sub>x</sub> and CO emission limits in paragraphs (c)(1), (c)(2), (c)(3), and (c)(4), and (c)(5).~~
- (7) ~~The owner or operator of any unit(s) subject to paragraph (c)(65) shall submit for the approval of the Executive Officer a compliance plan that demonstrates compliance with paragraph (c)(6). Such plan shall contain:~~

- ~~(A) A list of permits of all units with the rated heat input capacity and anticipated annual heat input.~~
- ~~(B) For each unit listed, a selection of one of the three options specified in paragraph (c)(6) to achieve compliance with this rule.~~
- ~~(C) Nonresettable fuel totalizing meter specifications for each fuel used, date of meter installation, records of fuel use for each unit during the last two years starting from March 1, 1991.~~

~~The plan shall be disapproved if for any continuous 12 month period, the annual fuel usage exceeds 90,000 therms. In this case the unit shall have to comply with the applicable emission limits specified in paragraphs (c)(1), (c)(2), (c)(3), or (c)(4).~~

- (87) Any unit(s) with a rated heat input capacity greater than or equal to 40 million Btu per hour and an annual heat input greater than  $200 \times 10^9$  Btu per year shall have a continuous in-stack nitrogen oxides monitor or equivalent verification system in compliance with 40 CFR part 60 Appendix B Specification 2. Maintenance and emission records shall be maintained and made accessible for a period of two years as to the Executive Officer.
- (9) ~~For owners or operators that are subject to the requirements specified in paragraph (c)(6), the provisions of paragraphs (c)(1), (c)(2), (c)(3), (c)(4), (c)(5), or (c)(8), as applicable, shall become effective for the life of the unit on March 1 of any calendar year if that unit operated for the previous calendar year at an annual heat input greater than:~~

  - ~~(A) 90,000 therms for units greater than or equal to 5 million Btu per hour; or~~
  - ~~(B)  $200 \times 10^9$  Btu per year for units greater than or equal to 40 million Btu per hour.~~
- (108) Any owner or operator who chooses the pound per million Btu compliance option specified in paragraph(s) (c)(1) or, (c)(2), ~~(c)(3), or (c)(4)~~ or chooses the weighted average emission limit using Equation 1146-1 under subparagraph (c)(3) shall install a non-resettable totalizing fuel meter to measure the total of each fuel used by each individual unit, as approved by the Executive Officer.

- (11) ~~Any owner or operator of a unit not covered under the provisions of paragraphs (c)(1), (c)(2), (c)(3), (c)(4), or (c)(8) based on annual heat input, shall:~~
- ~~(A) have installed by February 1, 1989 for units with a rated heat input capacity equal to or greater than 5 but less than 40 million Btu per hour, or by May 1, 1989 for units with a rated heat input capacity equal to or greater than 40 million Btu per hour, or at the time the unit is constructed, a totalizing meter for each fuel that demonstrates that the unit(s) operated at or below the applicable heat input levels; and~~
  - ~~(B) have available for inspection by the Executive Officer by March 1 of each year, records listing cumulative annual usage of each fuel for the preceding calendar year. Records shall be maintained and made accessible to the Executive Officer for a period of two years; and~~
  - ~~(C) demonstrate that the annual heat input is less than or equal to the applicable amount listed in the applicable paragraphs (c)(1), (c)(2), (c)(3), (c)(4), and/or (c)(8).~~
- (d) Compliance Determination
- (1) An owner or operator of any unit(s) shall have the option of complying with either the pound per million Btu or parts per million emission limits specified in paragraphs (c)(1), and (c)(2) ~~(c)(3), and (c)(4).~~
  - (2) All emission determinations shall be made in the as-found operating condition, except no compliance determination shall be established during start-up, shutdown, or under breakdown conditions. An emission determination shall be conducted at least 250 operating hours, or at least thirty days subsequent to the tuning or servicing of any unit, unless it is an unscheduled repair.
  - (3) All parts per million emission limits specified in subdivision paragraph (c) are referenced at 3 percent volume stack gas oxygen on a dry basis averaged over a period of 15 consecutive minutes.
  - (4) Compliance with the NO<sub>x</sub> and CO emission requirements of paragraphs (c)(1), (c)(2), (c)(3), (c)(4), and (c)(5) and the stack-gas oxygen concentration requirement of subparagraph (c)(6)(A) shall be determined according to the following procedures:

- (A) ~~in~~ District Source Test Method 100.1 - Instrumental Analyzer Procedures for Continuous Gaseous Emission Sampling (March 1989), or
- (B) District Source Test Method 7.1 - Determination of Nitrogen Oxide Emissions from Stationary Sources (March 1989) and District Source Test Method 10.1 - Carbon Monoxide and Carbon Dioxide by Gas Chromatograph/Non-Dispersive Infrared Detector (GC/NDIR) - Oxygen by Gas Chromatograph-Thermal Conductivity (GC/TCD) (March 1989); ~~or~~
- (C) United States Environmental Protection Agency Conditional Test Method CTM-030, Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Emissions from Natural Gas-Fired Engines, Boilers and Process Heaters Using Portable Analyzers; or
- (D) any other test method, ~~such as methods that allow the use of hand-held portable monitors,~~ determined to be alternative equivalent and approved before the test in writing by the Executive Officers of the District and the California Air Resources Board and the Regional Administrator of the United States Environmental Protection Agency, Region IX; ~~or~~
- (E) a continuous in-stack nitrogen oxide monitor or equivalent verification system as specified in paragraph (c)(7).

Records of all source tests shall be maintained for a rolling twelve month period of two years and shall be made available to District personnel upon request. Emissions determined to exceed any limits established by this rule through the use of any of the above-referenced test methods shall constitute a violation of this rule.

- (5) For any operator who chooses the pound per million Btu of heat input compliance option of paragraph (c)(1) or, ~~(c)(2), (e)(3), or (e)(4),~~ NO<sub>x</sub> emissions in pounds per million Btu of heat input shall be calculated using procedures in 40 CFR Part 60, Appendix A, Method 19, Sections 2 and 3.
- (6) Compliance determination with the NO<sub>x</sub> and CO emission requirements in subparagraphs (d)(4)(A), (d)(4)(B), and (d)(4)(D) shall be conducted once each calendar year, ~~or before January 1, 2002 and every year thereafter for units with a rated heat input capacity equal to or greater than 10 million Btu per hour and on or before July 1, 2002 and every year thereafter for units with a rated heat input capacity less than 10 million Btu per hour.~~



~~Notwithstanding the requirements of paragraph (d)(2), for the purposes of demonstrating compliance with the annual compliance determination, an owner or operator may tune a unit prior to conducting emissions testing. Any screening analysis while tuning the unit shall not be considered an emissions test for the annual compliance determination.~~

- (7) Provided the emissions test is conducted within the same calendar year as the test required in paragraph (d)(6), an owner or operator may use the following emissions tests to comply with paragraph (d)(6):

- (A) Periodic monitoring or testing of a unit as required in a Title V permit pursuant to Regulation XXX, or
- (B) Relative accuracy testing for continuous emissions monitoring verification pursuant to Rule 218.1.

- (8) Any owner or operator selecting the procedure specified in subparagraph (d)(4)(C) shall check emissions with a portable NOx, CO and oxygen analyzer at least monthly or every 750 unit operating hours, whichever occurs later. If a unit is in compliance for three consecutive emission checks, without any adjustments to the oxygen sensor set points, then the engine may be checked quarterly or every 2,000 unit operating hours, whichever occurs later, until there is a noncompliant emission check.

(e) Compliance Schedule

- (1) An owner or operator of units subject to paragraph (c)(1) shall comply with the schedule specified in Table 1146-1.

- (2) An owner or operator of units subject to paragraph (c)(2) shall comply with the schedule specified in Table 1146-2.

- (3) An owner or operator may opt to lower the unit's rated heat input capacity prior to the dates specified below.

(A) For units subject to subparagraph (c)(1)(E) – July 1, 2009.

(B) For units subject to subparagraphs (c)(1)(F), (c)(1)(G), (c)(2)(A), or (c)(2)(B) – July 1, 2010.

(C) For units subject to subparagraphs (c)(1)(H), (c)(1)(I), (c)(2)(C), or (c)(2)(D) – July 1, 2011.

The lower rated heat input capacity shall be based on manufacturer's identification or rating plate or permit condition.

- (4) On or after January 1, 2015 or during burner replacement, whichever occurs later, no person shall operate in the District any unit subject to

paragraph (c)(6) which does not meet the emissions limits specified in subparagraph (c)(1)(A) of Table 1146-1.

(5) Any unit subject to the requirements specified in paragraph (c)(6) that exceeds 90,000 therms of heat input from all fuels used in any twelve month period, the operators shall:

(A) within 4 months after exceeding 90,000 therms of heat input in any twelve month period, submit required applications for permits to construct and operate; and

(B) within 18 months after exceeding 90,000 therms of heat input in any twelve month period, demonstrate and maintain compliance with all applicable requirements of paragraphs (c)(1), (c)(2), (c)(3), (c)(4), (c)(7), and (c)(8) for the life of the unit.

**(e) Exemption**

~~A one time exemption from the requirements of paragraphs (c)(1), (c)(2), (c)(3), (c)(4), (c)(8) and (c)(12) is allowed for any owner or operator of a standby boiler whose fuel usage from all fuels exceeded 90,000 therms but was not greater than 110,000 therms of annual heat input during the calendar year 1996. As a condition of this exemption, an owner or operator shall submit an application for a permit modification by July 31, 2000 and accept additional permit conditions that provide for a daily emission increase, above what is allowed under paragraph (c)(1), (c)(2), (c)(3), and (c)(4) of less than 55 pounds per day of NO<sub>x</sub> for all standby boilers subject to this subdivision, an annual heat input of less than 90,000 therms for each standby boiler, and a daily recordkeeping condition.~~

## **ATTACHMENT 1**

### **A. Equipment Tuning Procedure<sup>1</sup> for Forced-Draft Boilers, Steam Generators, and Process Heaters**

Nothing in this Equipment Tuning Procedure shall be construed to require any act or omission that would result in unsafe conditions or would be in violation of any regulation or requirement established by Factory Mutual, Industrial Risk Insurers, National Fire Prevention Association, the California Department of Industrial Relations (Occupational Safety and Health Division), the Federal Occupational Safety and Health Administration, or other relevant regulations and requirements.

Should a different tuning procedure be used, a copy of this procedure should be kept with the unit records for two years and made available to the District personnel on request.

1. Operate the unit at the firing rate most typical of normal operation. If the unit experiences significant load variations during normal operation, operate it at its average firing rate.
2. At this firing rate, record stack gas temperature, oxygen concentration, and CO concentration (for gaseous fuels) or smoke-spot number<sup>2</sup> (for liquid fuels), and observe flame conditions after unit operation stabilizes at the firing rate selected. If the excess oxygen in the stack gas is at the lower end of the range of typical minimum values<sup>3</sup>, and if CO emissions are low and there is not smoke, the unit is probably operating at near optimum efficiency - at this particular firing rate.

However, complete the remaining portion of this procedure to determine whether still lower oxygen levels are practical.

3. Increase combustion air flow to the furnace until stack gas oxygen levels increase by one to two percent over the level measured in Step 2. As in Step 2, record the

---

<sup>1</sup> This tuning procedure is based on a tune-up procedure developed by KVB, Inc. for the United States EPA.

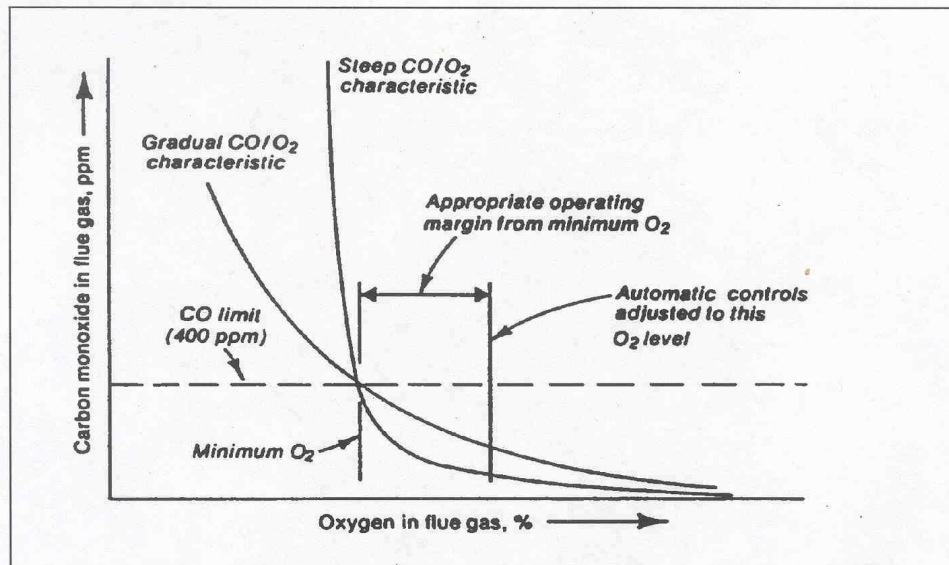
<sup>2</sup> The smoke-spot number can be determined with ASTM Test Method D-2156 or with the Bacharach method. ASTM Test Method D-2156 is included in a tuneup kit that can be purchased from the Bacharach Company.

<sup>3</sup> Typical minimum oxygen levels for boilers at high firing rates are:

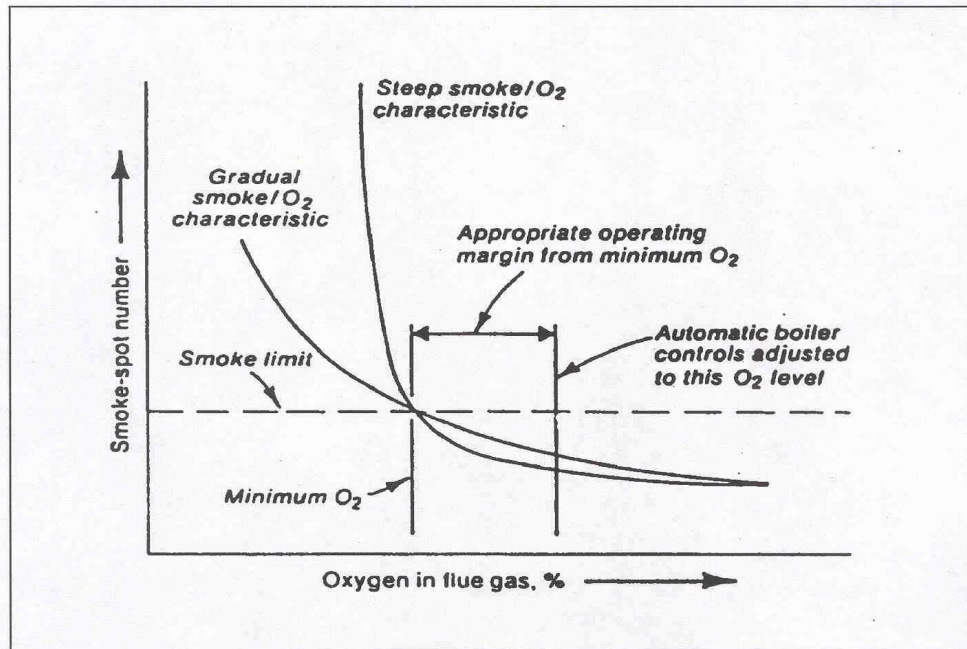
1. For natural gas: 0.5% - 3%
2. For liquid fuels: 2% - 4%

stack gas temperature, CO concentration (for gaseous fuels) or smoke-spot number (for liquid fuels), and observe flame conditions for these higher oxygen levels after boiler operation stabilizes.

4. Decrease combustion air flow until the stack gas oxygen concentration is at the level measured in Step 2. From this level gradually reduce the combustion air flow, in small increments. After each increment, record the stack gas temperature, oxygen concentration, CO concentration (for gaseous fuels) and smoke-spot number (for liquid fuels). Also observe the flame and record any changes in its condition.
5. Continue to reduce combustion air flow stepwise, until one of these limits is reached:
  - a. Unacceptable flame conditions - such as flame impingement on furnace walls or burner parts, excessive flame carryover, or flame instability.
  - b. Stack gas CO concentrations greater than 400 ppm.
  - c. Smoking at the stack.
  - d. Equipment-related limitations - such as low windbox/furnace pressure differential, built in air-flow limits, etc.
6. Develop an O<sub>2</sub>/CO curve (for gaseous fuels) or O<sub>2</sub>/smoke curve (for liquid fuels) similar to those shown in Figures 1 and 2 using the excess oxygen and CO or smoke-spot number data obtained at each combustion air flow setting.



**Figure 1 Oxygen/CO Characteristic Curve**



**Figure 2** Oxygen/Smoke Characteristic Curve

7. From the curves prepared in Step 6, find the stack gas oxygen levels where the CO emissions or smoke-spot number equal the following values:

<u>Fuel</u>	<u>Measurement</u>	<u>Value</u>
Gaseous	CO Emissions	400 ppm
#1 and #2 oils	smoke-spot number	number 1
#4 oil	smoke-spot number	number 2
#5 oil	smoke-spot number	number 3
Other oils	smoke-spot number	number 4

The above conditions are referred to as the CO or smoke thresholds, or as the minimum excess oxygen level.

Compare this minimum value of excess oxygen to the expected value provided by the combustion unit manufacturer. If the minimum level found is substantially higher than the value provided by the combustion unit manufacturer, burner adjustments can probably be made to improve fuel and air mixing, thereby allowing operation with less air.

8. Add 0.5 to 2.0 percent of the minimum excess oxygen level found in Step 7 and reset burner controls to operate automatically at this higher stack gas oxygen level. This margin above the minimum oxygen level accounts for fuel variations, variations in atmospheric conditions, load changes, and nonrepeatability or play in automatic controls.

9. If the load of the combustion unit varies significantly during normal operation, repeat Steps 1-8 for firing rates that represent the upper and lower limits of the range of the load. Because control adjustments at one firing rate may affect conditions at other firing rates, it may not be possible to establish the optimum excess oxygen level at all firing rates. If this is the case, choose the burner control settings that give best performance over the range of firing rates. If one firing rate predominates, settings should optimize conditions at that rate.
10. Verify that the new settings can accommodate the sudden load changes that may occur in daily operation without adverse effects. Do this by increasing and decreasing load rapidly while observing the flame and stack. If any of the conditions in Step 5 result, reset the combustion controls to provide a slightly higher level of excess oxygen at the affected firing rates. Next, verify these new settings in a similar fashion. Then make sure that the final control settings are recorded at steady-state operating conditions for future reference.
11. When the above checks and adjustments have been made, record data and attach combustion analysis data to boiler, steam generator, or heater records indicating name and signature of person, title, and date the tuneup was performed.

**B. Equipment Tuning Procedure for Natural Draft-Fired Boilers, Steam Generators, and Process Heaters.**

Nothing in this Equipment Tuning Procedure shall be construed to require any act or omission that would result in unsafe conditions or would be in violation of any regulation or requirement established by Factory Mutual, Industrial Risk Insurers, National Fire Prevention Association, the California Department of Industrial Relations (Occupational Safety and Health Division), the Federal Occupational Safety and Health Administration, or other relevant codes, regulations, and equipment manufacturers specifications and operating manuals.

Should a different tuning procedure be used, a copy of this procedure should be kept with the unit records for two years and made available to the District personnel on request.

**1. PRELIMINARY ANALYSIS**

- a. **CHECK THE OPERATING PRESSURE OR TEMPERATURE.**  
Operate the boiler, steam generator, or heater at the lowest acceptable pressure or temperature that will satisfy the load demand. This will minimize heat and radiation losses. Determine the pressure or temperature

that will be used as a basis for comparative combustion analysis before and after tuneup.

b. **CHECK OPERATING HOURS.**

Plan the workload so that the boiler, steam generator, or process heater operates only the minimum hours and days necessary to perform the work required. Fewer operating hours will reduce fuel use and emissions. For units requiring a tuneup to comply with the rule, a totalizing non-resettable fuel meter will be required for each fuel used and for each boiler, steam generator, and heater to prove fuel consumption is less than the heat input limit in therms per year specified in the rule.

c. **CHECK AIR SUPPLY.**

Sufficient fresh air supply is essential to ensure optimum combustion and the area of air supply openings must be in compliance with applicable codes and regulations. Air openings must be kept wide open when the burner is firing and clear from restriction to flow.

d. **CHECK VENT.**

Proper venting is essential to assure efficient combustion. Insufficient draft or overdraft promotes hazards and inefficient burning. Check to be sure that vent is in good condition, sized properly and with no obstructions.

e. **COMBUSTION ANALYSIS.**

Perform an "as is" combustion analysis (CO, O<sub>2</sub>, etc.) with a warmed up unit at high and low fire, if possible. In addition to data obtained from combustion analysis, also record the following:

- i. Inlet fuel pressure at burner (at high & low fire)
- ii. Draft above draft hood or barometric damper
  - 1) Draft hood: high, medium, and low
  - 2) Barometric Damper: high, medium, and low
- iii. Steam pressure, water temperature, or process fluid pressure or temperature entering and leaving the boiler, steam generator, or process heater.
- iv. Unit rate if meter is available.

With above conditions recorded, make the following checks and corrective actions as necessary:



2. **CHECKS & CORRECTIONS**

a. **CHECK BURNER CONDITION.**

Dirty burners or burner orifices will cause boiler, steam generator, or process heater output rate and thermal efficiency to decrease. Clean burners and burner orifices thoroughly. Also, ensure that fuel filters and moisture traps are in place, clean, and operating properly, to prevent plugging of gas orifices. Confirm proper location and orientation of burner diffuser spuds, gas canes, etc. Look for any burned-off or missing burner parts, and replace as needed.

b. **CHECK FOR CLEAN BOILER, STEAM GENERATOR, OR PROCESS HEATER TUBES & HEAT TRANSFER SURFACES.**

External and internal build-up of sediment and scale on the heating surfaces creates an insulating effect that quickly reduces unit efficiency. Excessive fuel cost will result if the unit is not kept clean. Clean tube surfaces, remove scale and soot, assure proper process fluid flow and flue gas flow.

c. **CHECK WATER TREATMENT & BLOWDOWN PROGRAM.**

Soft water and the proper water or process fluid treatment must be uniformly used to minimize scale and corrosion. Timely flushing and periodic blowdown must be employed to eliminate sediment and scale build-up on a boiler, steam generator or process heater.

d. **CHECK FOR STEAM, HOT WATER OR PROCESS FLUID LEAKS.**

Repair all leaks immediately since even small high-pressure leaks quickly lead to considerable fuel, water and steam losses. Be sure there are no leaks through the blow-off, drains, safety valve, by-pass lines or at the feed pump, if used.

3. **SAFETY CHECKS**

- a. Test primary and secondary low water level controls.
- b. Check operating and limit pressure and temperature controls.
- c. Check pilot safety shut off operation.
- d. Check safety valve pressure and capacity to meet boiler, steam generator or process heater requirements.
- e. Check limit safety control and spill switch.



4. **ADJUSTMENTS**

While taking combustion readings with a warmed up boiler, steam generator, or process heater at high fire perform checks and adjustments as follows:

- a. Adjust unit to fire at rate; record fuel manifold pressure.
- b. Adjust draft and/or fuel pressure to obtain acceptable, clean combustion at both high, medium and low fire. Carbon Monoxide (CO) value should always be below 400 parts per million (PPM) at 3% O<sub>2</sub>. If CO is high make necessary adjustments.

Check to ensure boiler, steam generator, or process heater light offs are smooth and safe. A reduced fuel pressure test at both high and low fire should be conducted in accordance with the manufacturers instructions and maintenance manuals.

- c. Check and adjust operation of modulation controller. Ensure proper, efficient and clean combustion through range of firing rates.

When above adjustments and corrections have been made, record all data.

5. **FINAL TEST**

Perform a final combustion analysis with a warmed up boiler, steam generator, or process heater at high, medium and low fire, whenever possible. In addition to data from combustion analysis, also check and record:

- a. Fuel pressure at burner (High, Medium, and Low).
- b. Draft above draft hood or barometric damper (High, Medium and Low).
- c. Steam pressure or water temperature entering and leaving boiler, steam generator, or process heater.
- d. Unit rate if meter is available.

When the above checks and adjustments have been made, record data and attach combustion analysis data to boiler, steam generator, or process heater records indicating name and signature of person, title, company name, company address and date the tuneup was performed.